

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 27.08.96

Test oil : ISO 4113

Combination No. : 0 402 646 742

Injection pump

Pump designation : PE6P120A320LS7837-2

EP type number : 0 412 626 943

Governor

Governer design. : RQ300/1100PA1272

Governer no. : 0 421 801 804

Cust. part No. : 0270743002

Customer-spec. information

Customer : MB-NFZ

Motor : OM441 LA

Power KW : 228.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C : 40

Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5

Tolerance bar : ± 0.1

Overflow quantity

min. l/h : 120

Tolerance l/h : ± 20.0

Test nozzle holde

assembly : 1 688 901 019

Opening pressure

bar : 208.5

Tolerance bar : ± 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0

x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0

Tolerance bar : ± 1.0

Prestroke mm : 5.25

Tolerance mm : ± 0.05

Check

tolerance mm : ± 0.10

Rack travel in mm : 20.50

Tolerance mm : ± 0.50

Firing order : 6- 3- 5- 2- 4-
: 1

Phasing : 0-60-120-180-240

: -300

Tolerance : ± 0.30

Check

tolerance °NW : ± 0.50

Start of delivery mark

Tolerance : ± 0.10

Check

tolerance °NW : ± 0.75

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 600

Rack travel in mm : 12.60

Rack travel in mm : 12.60
 Tolerance mm : \pm 0.05
 Tolerance mm : \pm 0.05

Del. quantity
 cm³/1000 strokes : 193.5

Tolerance
 cm³/1000 strokes : \pm 1.0

Check tolerance
 cm³/1000S. : \pm 4.0

Spreed
 Tolerance
 cm³/1000 strokes : 6.0

Check tolerance
 cm³/1000S. : 9.0

Rated speed rpm : 300

Rack travel in mm : 5.60
 Tolerance mm : \pm 0.10

Del. quantity
 cm³/1000 strokes : 19.0

Tolerance
 cm³/1000 strokes : \pm 3.0

Check tolerance
 cm³/1000S. : \pm 6.0

Spreed
 Tolerance
 cm³/1000 strokes : 6.0

Check tolerance
 cm³/1000S. : 10.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 300
 guide sleeve
 travel mm : 1.94
 Tolerance mm : \pm 0.20

Rated speed rpm : 1153
 guide sleeve
 travel mm : 6.37
 Tolerance mm : \pm 0.15

Rated speed rpm : 1100
 guide sleeve
 travel mm : 6.00
 Tolerance mm : \pm 0.10

Rated speed rpm : 431
 guide sleeve
 travel mm : 4.71
 Tolerance mm : \pm 0.10

Rated speed rpm : 570
 guide sleeve
 travel mm : 6.00
 Tolerance mm : \pm 0.10

Rated speed rpm : 1350
 guide sleeve
 travel mm : 11.50
 Tolerance mm : \pm 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 650

Rack travel in mm : 20.00
 Tolerance mm : \pm 0.80

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 600
 Aneroid pressure
 hPa : 600

Del. quantity
 cm³/1000 strokes : 193.5

Tolerance
 cm³/1000 strokes : \pm 1.0

Check tolerance
 cm³/1000S. : \pm 4.0

Spreed
 Tolerance
 cm³/1000 strokes : 6.0

Check tolerance
 cm³/1000S. : 9.0

CONTROL LEVER

control lever
 position degree : 94.0
 tolerance degree : \pm 4.0

RATED SPEED

rack travel mm : 12.70
 Rated speed rpm : 1140
 Tolerance 1/min : \pm 8

rack travel mm : 4.00
 Rated speed rpm : 1250
 Tolerance 1/min : \pm 15

rack travel mm : 0.75

Tolerance mm : \pm 0.75
Rated speed rpm : 1350

LOW IDLE

control lever
position degree : 72.0
tolerance degree : \pm 4.0

Testing:

Rated speed rpm : 300
rack travel mm : 5.60
Tolerance mm : \pm 0.10

rack travel mm : 2.00
Rated speed rpm : 400
Tolerance 1/min : \pm 20

Rated speed rpm : 200
CRT mm min. : $>$ 9.00

TORQUE CONTROL

Rated speed rpm : 600
rack travel mm : 12.60
Tolerance mm : \pm 0.05

Rated speed rpm : 1100
rack travel mm : 13.70
Tolerance mm : \pm 0.10

Rated speed rpm : 700
rack travel mm : 13.70
Tolerance mm : \pm 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

MEASUREMENT

Pressure hPa : 350
rack travel mm : -0.80
Tolerance mm : \pm 0.15

Pressure hPa : 200
rack travel mm : -2.00
Tolerance mm : \pm 0.20

Pressure hPa : 975
rack travel mm : 0.50
Tolerance mm : \pm 0.05

START CUT-OUT

Rated speed rpm : $>$ 100
Rated speed rpm : $<$ 220

Check
speed 1/min : $>$ 80
Check
speed 1/min : $<$ 240

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 1100
Del. quantity
cm³/1000 strokes : 219.0
Tolerance
cm³/1000 strokes : \pm 1.5
Check tolerance
cm³/1000S. : \pm 4.5
Speed
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

Aneroid pressure
hPa : 1500
Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 214.0
Tolerance
cm³/1000 strokes : \pm 3.0
Check tolerance
cm³/1000S. : \pm 6.0

Aneroid pressure
hPa : 350
Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 160.0
Tolerance
cm³/1000 strokes : \pm 1.0
Check tolerance
cm³/1000S. : \pm 4.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 151.0
Tolerance
cm³/1000 strokes : \pm 1.0
Check tolerance
cm³/1000S. : \pm 4.0

BREAKAWAY

Rack travel in mm : 12.70
Rated speed rpm : 1140
Tolerance 1/min : \pm 8

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 205.0
Tolerance
cm³/1000 strokes : \pm 10.0
Check tolerance
cm³/1000S. : \pm 19.0

LOW IDLE

Rated speed rpm : 300
Del. quantity
cm³/1000 strokes : 19.0
Tolerance
cm³/1000 strokes : \pm 3.0
Check tolerance
cm³/1000S. : \pm 6.0
Spreed
Tolerance
cm³/1000 strokes : 6.0
Check tolerance
cm³/1000S. : 10.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 26.08.96
Test oil : ISO 4113
Combination No. : 0 402 746 609C
Injection pump
Pump designation : PES6P130A72ORS7411
EP type number : 0 412 736 808
Governor
Governor design. : RQ275/950PA1274
Governor no. : 0 421 801 807

Cust. part No. : 221 575

Customer-spec. information
Customer : RABA
Motor : siehe Bemerkung

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet
temp. °C : 40
Tolerance °C : ± 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5
Tolerance bar : ± 0.1

Test nozzle holde
assembly : 1 688 901 105

Opening pressure
bar : 208.5
Tolerance bar : ± 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0
x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure bar : 26.0
Tolerance bar : ± 1.0

Prestroke mm : 5.50
Tolerance mm : ± 0.05
Check
tolerance mm : ± 0.10

Rack travel in mm : 20.50
Tolerance mm : ± 0.50

Firing order : 1- 5- 3- 6- 2-
: 4

Phasing : 0-60-120-180-240
: -300
Tolerance : ± 0.30
Check
tolerance °NW : ± 0.50

Start of delivery mark

Tolerance : ± 0.10
Check
tolerance °NW : ± 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 600

Rack travel in mm : 13.10
Tolerance mm : ± 0.05

Del. quantity
cm³/1000 strokes : 263.0

Tolerance
cm3/1000 strokes : +- 1.0

Check tolerance
cm3/1000S. : +- 4.0

Spread
Tolerance
cm3/1000 strokes : 5.0

Check tolerance
cm3/1000S. : 9.0

Rated speed rpm : 275

Rack travel in mm : 4.20
Tolerance mm : +- 0.10

Del. quantity
cm3/1000 strokes : 24.0

Tolerance
cm3/1000 strokes : +- 3.0

Check tolerance
cm3/1000S. : +- 6.0

Spread
Tolerance
cm3/1000 strokes : 8.0

Check tolerance
cm3/1000S. : 12.0

(B) SETTING OF INJECTION PUMP WITH GOVERNOR

GUIDE SLEEVE TRAVEL

Rated speed rpm : 275
guide sleeve
travel mm : 2.06
Tolerance mm : +- 0.20

Rated speed rpm : 1007
guide sleeve
travel mm : 6.56
Tolerance mm : +- 0.15

Rated speed rpm : 950
guide sleeve
travel mm : 6.00
Tolerance mm : +- 0.10

Rated speed rpm : 361
guide sleeve
travel mm : 4.45
Tolerance mm : +- 0.10

Rated speed rpm : 450
guide sleeve
travel mm : 6.00

Tolerance mm : +- 0.10

Rated speed rpm : 1200
guide sleeve
travel mm : 11.50
Tolerance mm : +- 0.50

GUIDE SLEEVE POSITION

Rated speed rpm : 1059

Rack travel in mm : 10.90
Tolerance mm : +- 1.30

FULL LOAD DELIVERY AT FULL LOAD STOP

Rated speed rpm : 600
Aneroid pressure
hPa : 1500

Del. quantity
cm3/1000 strokes : 263.0

Tolerance
cm3/1000 strokes : +- 1.0

Check tolerance
cm3/1000S. : +- 4.0

Spread
Tolerance
cm3/1000 strokes : 5.0

Check tolerance
cm3/1000S. : 9.0

CONTROL LEVER

control lever
position degree : 34.0
tolerance degree : +- 4.0

control lever
position degree : 96.0
tolerance degree : +- 4.0

RATED SPEED

rack travel mm : 12.10
Rated speed rpm : 1095
Tolerance 1/min : +- 5

rack travel mm : 4.00
Rated speed rpm : 1190
Tolerance 1/min : +- 15

rack travel mm : 0.50
Tolerance mm : +- 0.50
Rated speed rpm : 1300

LOW IDLE

control lever
position degree : 73.0
tolerance degree : +- 4.0

control lever
position degree : 12.0
tolerance degree : +- 4.0

Testing:

Rated speed rpm : 275
rack travel mm : 4.20
Tolerance mm : +- 0.10

rack travel mm : 2.00
Rated speed rpm : 335
Tolerance 1/min : +- 20

Rated speed rpm : 175

CRT mm min. : > 6.80

TORQUE CONTROL

Rated speed rpm : 600
rack travel mm : 13.10
Tolerance mm : +- 0.05

Rated speed rpm : 1050
rack travel mm : 13.10
Tolerance mm : +- 0.10

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 500
Pressure hPa : 1500
rack travel mm : 13.10
Tolerance mm : +- 0.05

MEASUREMENT

Pressure hPa : -
Rated speed rpm : 500
rack travel mm : 8.20
Tolerance mm : +- 0.20

Rated speed rpm : 500

Pressure hPa : 380

A07

rack travel mm : 9.85
Tolerance mm : +- 0.15

Pressure hPa : 600
rack travel mm : 12.05
Tolerance mm : +- 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : 1500
Rated speed rpm : 1050
Del. quantity
cm³/1000 strokes : 252.0
Tolerance
cm³/1000 strokes : +- 3.0
Check tolerance
cm³/1000S. : +- 6.0

Aneroid pressure
hPa : -
Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 147.0
Tolerance
cm³/1000 strokes : +- 2.0
Check tolerance
cm³/1000S. : +- 4.0

BREAKAWAY

Rack travel in mm : 12.10
Rated speed rpm : 1095
Tolerance 1/min : +- 5

STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Del. quantity
cm³/1000 strokes : 110.0
Tolerance
cm³/1000 strokes : +- 20.0
Check tolerance
cm³/1000S. : +- 24.0

LOW IDLE

Rated speed rpm : 275

Del. quantity
cm³/1000 strokes : 24.0
Tolerance
cm³/1000 strokes : \pm 3.0
Check tolerance
cm³/1000S. : \pm 6.0
Spreed
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 12.0

End of test specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 31.3.95
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 876 242

Injection pump
Pump designation : PES6A95D41ORS2471
EP type number : 0 410 896 952
Governor
Governor design. : RS325/1325A0C691L

Customer-spec. information
Customer : KHD

Engine : BF6L 913 C

1st version kW : 141.0
Rated speed >: 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 0 681 343 009

Opening
pressure, bar> : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall>thickness
x Length mm> : 6.00X2.00X600

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 1.90...2.00
> : (1.85...2.05)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 9.6...9.8

> 100 s: (9.4...10.0)

Spread cm3 : 0.3

> 100 s: (0.6)

2nd speed rpm : 325

Rack travel in mm : 7.6...7.8

Del.quantity cm3/ : 0.9...1.5

> 100 s: (0.6...1.7)

Spread cm3 : 0.3

> 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 900

Del.quantity : 106.0...107.0

> 1000 : (104.0...109.0)

Spread cm3 : 3.50

> 1000 : (6.00)

RATED SPEED

1st version

Control lever

position> degrees: 49...57

Testing:

1st rack travel in: 10.50

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 1040...1070

4th rack travel in: 1520
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 8.5

Testing:

Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 325
Rack travel in mm : 8.40...8.60
Rack travel in mm : 6.00
Speed rpm : 400...425

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.60...11.70
2nd speed rpm : 500
Rack travel in m: 11.60...11.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1250
Pressure hPa : 900
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : *

1st pressure hPa : *

Rack travel in m: *

2nd pressure hPa : *

Rack travel in m: *

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600
Speed rpm : 800
Del.quantity cm3/ : 104.0...105.0
> 1000 s: (102.0...107.0)
Aneroid pressure h: 300
Speed rpm : 500
Del.quantity cm3/ : 61.0...62.0
> 1000 s: (59.0...64.0)
Aneroid pressure h: -
Speed rpm : 650
Del.quantity cm3/ : 84.0...85.0
> 1000 s: 82.0...87.0)

BREAKAWAY

1st version

1mm rack travel less than
>
full load rack tr: 10.60
Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
> 1000 s: (110.0...140.0)

Remarks:

:

* Value only applies to initial setting
of LDA spring.

Ultimate setting of the LDA spring is
performed by way of the appropriate
setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : GUA
Edition : 27.8.96
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 830 701

Injection pump
Pump designation : PE12P130A120LS3094
EP type number : 0 411 830 700
Governor
Governor design. : RQV350...900PA802
Governor no. : 0 421 813 312

Customer-spec. information
Customer : GUASCOR

Engine : E318

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 0 681 443 022

Opening
pressure, bar> : 172...175

Test lines : 1 680 750 080

Outside diameter
x Wall>thickness : 8.00x2.00x1000
x Length mm>

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
> : (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1-12-9-4-5-8-11-2-3-
10-7-6

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
Rack travel in mm : 9.40...9.50
Del.quantity cm3/ : 25.5...25.9
> 100 s: (25.2...26.2)
Spread cm3 : 0.5
> 100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 4.0...4.2
Del.quantity cm3/ : 2.1...2.7
> 100 s: (1.8...3.0)
Spread cm3 : 0.8
> 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 940
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Del.quantity : 255.0...259.0
> 1000 : (252.0...262.0)
Spread cm3 : 5.00
> 1000 : (9.00)

RATED SPEED

1st version
Control Lever
position> degrees: 58...64

Testing:
1st rack travel in: 8.40
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 970...1000
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...14

Testing:

Speed rpm : 100
Minimum rack trave: 5.80
Speed rpm : 350
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION

Speed rpm : 355...465

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 8.40
Speed rpm : 940...950

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
Edition : 23.3.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 846 539

Injection pump
Pump designation : PE6P110A320RS483-5
Governor
Governor design. : RQV250...1200PA918-3

Customer-spec. information
Customer : VOLVO

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 0 681 343 009

Opening
pressure, bar> : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall>thickness
x Length mm> : 6.00x1.50x600

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
> : (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 12.70...12.80
Del.quantity cm3/ : 13.2...13.4
> 100 s: (13.0...13.6)
Spread cm3 : 0.4
> 100 s: (0.7)

2nd speed rpm : 250.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 1.6...2.0
> 100 s: (1.3...2.3)
Spread cm3 : 0.3
> 100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.10...1.30
2nd speed rpm : 380
travel mm : 2.30...2.60
3rd speed rpm : 500
travel mm : 2.90...3.30
4th speed rpm : 1260
travel mm : 7.70...7.90
5th speed rpm : 1400
travel mm : 9.00...9.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1330
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 132.0...134.0
> 1000 : (129.0...137.0)
Spread cm3 : 4.00
> 1000 : (7.50)

RATED SPEED

1st version
Control lever
position> degrees: 54...62

Testing:
1st rack travel in: 11.70
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : CA. 1450
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 6...14

Testing:
Speed rpm : 100
Minimum rack trave: 6.80
Speed rpm : 250
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 250...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 230
Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 71.0...74.0
> 1000 s: (68.0...77.0)

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 11.70
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
> 1000 s: (166.0...204.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 16.0...20.0
> 1000 s: (13.0...23.0)
Spread cm3 : 3.00
> 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
Edition : 14.6.94
Replaces : 2.11.93
Test oil : ISO-4113

Combination no. : 0 401 846 950

Injection pump
Pump designation : PE6P110A720RS3289
EP type number : 0 411 816 781
Governor
Governor design. : RQV200...1100PA555-5
Governor no. : 0 421 813 943

Customer-spec. information
Customer : SCANIA

Engine : DS11 63A

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 1 688 901 104

Opening
pressure, bar> : 250...253

Orifice plate
diameter mm> : 0,7

Test lines : 1 680 750 008

Outside diameter
x Wall>thickness : 6.00X2.00X600
x Length mm>

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40
> : (3.25...3.45)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 17.1...17.3

> 100 s: (16.9...17.5)

Spread cm3 : 0.6

> 100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 1.9...2.5

> 100 s: (1.6...2.8)

Spread cm3 : 0.3

> 100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.70...1.10

2nd speed rpm : 350
travel mm : 2.00...2.60

3rd speed rpm : 650
travel mm : 4.90...5.50

4th speed rpm : 1145
travel mm : 8.30...8.50

5th speed rpm : 1300
travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 171.0...173.0

> 1000 : (168.0...176.0)

Spread cm3 : 8.00

> 1000 : (12.0)

RATED SPEED

1st version
Control lever
position> degrees: 112...120

Testing:
1st rack travel in: 11.30
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1280...1310
4th rack travel in: 1420
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 65...73

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 325
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 400...460

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 200
Rack travel in m: 11.70...11.80
3rd pressure hPa : 140
Rack travel in m: 10.65...10.95

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1100
Del.quantity cm³/ : 160.0...168.0
> 1000 s: (158.0...170.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 112.0...116.0
> 1000 s: (110.0...118.0)

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 11.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO
diaphragm.

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 3.12.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 848 825

Injection pump
Pump designation : PE8P120A920/5LS3208
EP type number : 0 411 828 721
Governor
Governor design. : RQ200/1200PA1088
Governor no. : 0 421 801 692

Customer-spec. information
Customer : KHD

Engine : BF8L513CP

1st version kW : 235.0
Rated speed > : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 1 688 901 019

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall>thickness : 6.00X1.50X1000
x Length mm>

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
> : (3.45...3.65)
Rack travel in mm : 15.00...19.00
Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 13.20...13.30
Del.quantity cm3/ : 16.6...16.8
> 100 s: (16.3...17.1)
Spread cm3 : 0.6
> 100 s: (1.0)

2nd speed rpm : 300.0
Rack travel in mm : 7.6...7.8
Del.quantity cm3/ : 2.0...2.6
> 100 s: (1.7...2.9)
Spread cm3 : 0.9
> 100 s: (1.3)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 300
travel mm : 1.00...1.40
2nd speed rpm : 400
travel mm : 2.20...2.80
3rd speed rpm : 550
travel mm : 3.50...4.10
4th speed rpm : 1200
travel mm : 8.20...8.40
5th speed rpm : 1285
travel mm : 9.00...9.40

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1220
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150

Aneroid pressure h: 900
Del.quantity : 166.0...168.0
> 1000 : (163.0...171.0)
Spread cm3 : 6.00
> 1000 : (10.00)

RATED SPEED

1st version
Control lever
position> degrees: 116...124

Testing:
1st rack travel in: 12.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 81...89

Testing:
Speed rpm : 100
Minimum rack trave: 9.20
Speed rpm : 300
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION
Speed rpm : 300...510

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 13.20...13.30
2nd speed rpm : 700
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.40...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.80...13.00
2nd pressure hPa : 500
Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 167.0...171.0
> 1000 s: (164.0...174.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
> 1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 12.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...190.0

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 s
Edition : 03.12.92
Replaces : 22.11.91
Test oil : ISO-4113

Combination no. : 0 401 876 778

Injection pump
Pump designation : PE6P110A720RS3263
EP type number : 0 411 816 776
Governor
Governor design. : RSV350...1100P1A481-3
Governor no. : 0 421 833 344

Customer-spec. information
Customer : SCANIA

Engine : DN11 47

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 1 688 901 104

Opening
pressure, bar> : 250...253

Orifice plate
diameter mm> : 0,7

Test lines : 1 680 750 008

Outside diameter
x Wall>thickness : 6.00X2.00X600
x Length mm>

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40
> : (3.25...3.45)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 12.0...12.2

> 100 s: (11.7...12.5)

Spread cm3 : 0.5

> 100 s: (0.8)

2nd speed rpm : 350

Rack travel in mm : 6.7...7.1

Del.quantity cm3/ : 2.0...2.4

> 100 s: (-)

Spread cm3 : 0.3

> 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 120.0...122.0

> 1000 : (117.0...125.0)

Spread cm3 : 5.00

> 1000 : (8.00)

RATED SPEED

1st version

Control Lever

position> degrees: 82...90

Testing:

1st rack travel in: 10.20

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 784...792

4th rack travel in: 920

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 82...90

Setting point w/out bumper spring

Speed rpm : 790

Rack travel in mm : 4.6

Speed rpm : 790

Rack travel in mm : 4.50...4.70

BREAKAWAY

1st version

1mm rack travel less than

>

full load rack tr: 10.20

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 220.0...270.0

>

1000 s: (216.0...274.0)

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Speed rpm : 790

Rack travel in mm : 4.50...4.70

Spread cm3 : 7.00

>

1000 s: (10.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 26.02.93
Replaces : 3.2.93
Test oil : ISO-4113

Combination no. : 0 401 876 796

Injection pump
Pump designation : PE6P120A320LS3815-13
EP type number : 0 411 826 782
Governor
Governor design. : RSV675...1050POA820-12
Governor no. : 0 421 833 401

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441A

1st version kW : 162.0
Rated speed >: 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min.>1/h: 100...120

Test nozzle holder
assembly> : 1 688 901 019

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall>thickness : 8.00X2.50X1000
x Length mm>

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
> : (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 15.9...16.1

> 100 s: (15.6...16.4)

Spread cm3 : 0.5

> 100 s: (0.9)

2nd speed rpm : 675.0

Rack travel in mm : 3.1...3.7

Del.quantity cm3/ : 1.4...2.0

> 100 s: (1.1...2.3)

Spread cm3 : 0.8

> 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 159.0...161.0

> 1000 : (156.0...164.0)

Spread cm3 : 5.00

> 1000 : (9.00)

RATED SPEED

1st version

Control lever

position> degrees: 89...97

Testing:

1st rack travel in: 9.50
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1140...1158
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 675
Rack travel in mm : 3.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 675
Rack travel in mm : 3.30...3.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 10.50...10.60
2nd speed rpm : 700
Rack travel in m: 12.50...12.70
3rd speed rpm : 975
Rack travel in m: 11.30...11.50
4th speed rpm : 500
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 201.0...205.0
> 1000 s: (198.0...208.0)
Spread cm3 : 8.00
> 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
>
full load rack tr: 9.50
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100

A22

Del.quantity cm3/ : 190.0...210.0
> 1000 s: (186.0...214.0)

Remarks:

:

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : NAV
Edition : 18.10.93
Replaces : 5.3.93
Test oil : ISO-4113

Combination no. : 0 402 046 838

Injection pump
Pump designation : PES6P100A320LS3306
EP type number : 0 412 006 703
Governor
Governor design. : RQV350...1200PA1042-K
Governor no. : 0 421 815 320

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 172.0
Rated speed >: 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 2 417 413 076

Inlet press., bar : 2.80

Test nozzle holder
assembly> : 1 688 901 101

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall>thickness
x Length mm> : 6.00X1.50X600

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05
> : (2.8...3.1)
Rack travel in mm : 14.0...17.0
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 13.5...13.6

Del.quantity cm3/ : 14.75...14.95

> 100 s: (14.55...15.15)

Spread cm3 : 0.8

> 100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.3...1.7

> 100 s: (1.05...1.95)

Spread cm3 : 0.4

> 100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.8...2.0

2nd speed rpm : 500
travel mm : 3.5...3.9

3rd speed rpm : 800
travel mm : 6.2...6.6

4th speed rpm : 1250
travel mm : 9.3...9.5

5th speed rpm : 1400
travel mm : 10.5...11.0

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1440

Rack travel in mm : 7.0...13.0

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1200
Del.quantity : 147.5...149.5
> 1000 : (145.5...151.5)
Spread cm3 : 8.00
> 1000 : (12.0)

RATED SPEED

1st version
Control lever
position> degrees: 116...124

Testing:
1st rack travel in: 13.90
Speed rpm : 1270...1300
2nd rack travel in: 4.00
Speed rpm : 1440...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82

Testing:
Speed rpm : 275
Minimum rack trave: 7.60
Speed rpm : 350
Rack travel in mm : 6.0...6.2

CONSTANT REGULATION
Speed rpm : 350...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 13.5...13.6
2nd speed rpm : 1200
Rack travel in m: 14.9...15.1
3rd speed rpm : 600
Rack travel in m: 12.6...13.0

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 14.6...14.8

Measurement
Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 9.4...9.8
2nd pressure hPa : 300
Rack travel in m: 10.7...10.8
3rd pressure hPa : 730

Rack travel in m: 13.2...13.6

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 147.5...149.5
> 1000 s: (145.5...151.5)
Spread cm3 : 8.00
> 1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm3/ : 178.0...182.0
> 1000 s: (176.0...184.0)
Spread cm3 : 8.00
> 1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 900
Del.quantity cm3/ : 69.0...73.0
> 1000 s: (67.0...75.0)

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 13.90
Speed rpm : 1250...1280

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...160.0
> 1000 s: (115.0...165.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.0...6.2
Del.quantity cm3/ : 13.0...17.0
> 1000 s: (11.5...19.5)
Spread cm3 : 4.00
> 1000 s: (6.50)

Remarks:

: NAVISTAR #1819913C91

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : NAV
Edition : 24.02.94
Replaces : 11.93
Test oil : ISO-4113

Combination no. : 0 402 046 845

Injection pump
Pump designation : PES6P100A320LS3309
EP type number : 0 412 006 704
Governor
Governor design. : RQV350...1200PA1042-6K
Governor no. : 0 421 815 330

Customer-spec. information

Engine : DTA-408

1st version kW : 142.0
Rated speed >: 2600
Rated speed >: 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 2 417 413 076

Inlet press., bar : 2.80

Test nozzle holder
assembly> : 1 688 901 101

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall>thickness
x Length mm> : 6.00X1.50X600

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 16...18

Prestroke mm : 2.95...3.05
> : (2.9...3.1)
Rack travel in mm : 14.0...17.0
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
Rack travel in mm : 12.1...12.2
Del.quantity cm3/ : 13.25...13.45
> 100 s: (13.15...13.65)
Spread cm3 : 0.8
> 100 s: (1.2)

2nd speed rpm : 350.0
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 1.45...1.85
> 100 s: (1.2...2.1)
Spread cm3 : 0.4
> 100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.6...2.0
2nd speed rpm : 500
travel mm : 3.8...4.2
3rd speed rpm : 800
travel mm : 5.8...6.2
4th speed rpm : 1300
travel mm : 8.9...9.1
5th speed rpm : 1500
travel mm : 10.4...10.8

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 132.5...134.5
> 1000 : (130.5...136.5)
Spread cm3 : 8.00
> 1000 : (12.0)

RATED SPEED

1st version

Control lever

position> degrees: 112...122

Testing:

1st rack travel in: 11.40

Speed rpm : 1390...1420

2nd rack travel in: 4.00

Speed rpm : 1530...1540

4th rack travel in: 1650

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 69...81

Testing:

Speed rpm : 275

Minimum rack travel: 6.70

Speed rpm : 350

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 350...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 12.1...12.2

2nd speed rpm : 1300

Rack travel in m: 12.4...12.6

3rd speed rpm : 700

Rack travel in m: 11.4...11.8

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1300

Pressure hPa : 1200

Rack travel mm : 12.4...12.6

Measurement

Speed 1/min : 1300

1st pressure hPa : -

Rack travel in m: 8.4...8.8

2nd pressure hPa : 270

Rack travel in m: 9.6...9.7

3rd pressure hPa : 570

Rack travel in m: 11.2...11.6

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1300

Del.quantity cm3/ : 139.0...143.0

> 1000 s: (137.0...145.0)

Spread cm3 : 8.00

> 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 900

Del.quantity cm3/ : 66.0...70.0

> 1000 s: (64.0...72.0)

BREAKAWAY

1st version

1mm rack travel less than

>

full load rack tr: 11.40

Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...160.0

> 1000 s: (115.0...165.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 14.5...18.5

> 1000 s: (12.0...21.0)

Spread cm3 : 4.00

> 1000 s: (6.50)

Remarks:

: NAVISTAR #1819922C91

Limit shutoff stop screw to 1.0 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : NAV
Edition : 24.02.94
Replaces : 14.10.93
Test oil : ISO-4113

Combination no. : 0 402 046 846

Injection pump
Pump designation : PES6P100A320LS3309
EP type number : 0 412 006 704
Governor
Governor design. : RQV350...1200PA1042-7K
Governor no. : 0 421 815 331

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-408

1st version kW : 130.5
Rated speed >: 2600
Rated speed >: 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 2 417 413 076

Inlet press., bar : 2.80

Test nozzle holder
assembly> : 1 688 901 101

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall>thickness
x Length mm> : 6.00x1.50x600

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 16...18

Prestroke mm : 2.95...3.05
> : (2.9...3.1)
Rack travel in mm : 14.0...17.0
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
Rack travel in mm : 11.0...11.1

Del.quantity cm3/ : 10.0...10.2
> 100 s: (9.8...10.4)

Spread cm3 : 0.8
> 100 s: (1.2)

2nd speed rpm : 350.0
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 1.45...1.85
> 100 s: (1.2...2.1)
Spread cm3 : 0.4
> 100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.6...2.0
2nd speed rpm : 500
travel mm : 3.8...4.2
3rd speed rpm : 800
travel mm : 5.8...6.2
4th speed rpm : 1300
travel mm : 8.9...9.1
5th speed rpm : 1500
travel mm : 10.4...10.8

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 100.0...102.0
> 1000 : (98.0...104.0)
Spread cm3 : 8.00
> 1000 : (12.0)

RATED SPEED

1st version

Control lever

position> degrees: 114...126

Testing:

1st rack travel in: 10.7

Speed rpm : 1360...1390

2nd rack travel in: 4.00

Speed rpm : 1500...1510

4th rack travel in: 1650

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 69...81

Testing:

Speed rpm : 275

Minimum rack travel: 6.20

Speed rpm : 350

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 350...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 11.0...11.1

2nd speed rpm : 1300

Rack travel in m: 11.7...11.9

3rd speed rpm : 700

Rack travel in m: 10.3...10.7

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1300

Pressure hPa : 1200

Rack travel mm : 11.7...11.9

Measurement

Speed 1/min : 1300

1st pressure hPa : -

Rack travel in m: 8.8...9.2

2nd pressure hPa : 270

Rack travel in m: 9.8...9.9

3rd pressure hPa : 580

Rack travel in m: 11.1...11.5

START CUT-OUT

Speed 1/min : 280 (290)

A28

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1300

Del.quantity cm3/ : 122.0...126.0

> 1000 s: (120.0...128.0)

Spread cm3 : 8.00

> 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 900

Del.quantity cm3/ : 69.0...73.0

> 1000 s: (67.0...75.0)

BREAKAWAY

1st version

1mm rack travel less than

>

full load rack tr: 10.70

Speed rpm : 1360...1390

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...160.0

> 1000 s: (115.0...165.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 14.5...18.5

> 1000 s: (12.0...21.0)

Spread cm3 : 4.00

> 1000 s: (6.50)

Remarks:

: NAVISTAR #1819923C91

Limit shutoff stop screw to 1.0 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 4.9.96
 Replaces : 5.94
 Test oil : ISO-4113
 Combination no. : 0 402 646 796
 Injection pump
 Pump designation : PE6P120A320LS7858
 EP type number : 0 412 626 875
 Governor
 Governor design. : RQ300/1050PA1030-12
 Governor no. : 0 421 801 729

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401LA

1st version kW : 200.0
 Rated speed >: 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C> : 38...42

Overflow valve
 > : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly> : 1 688 901 105

Opening
 pressure, bar> : 207...210

Orifice plate
 diameter mm> : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall>thickness : 8.10X1.50X1000
 x Length mm>

(A) Injection pump setting values
 > Insp. values in parentheses
 > Set equal delivery quant.
 > per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 > : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 18.9...19.1

> 100 s: (18.6...19.4)

Spread cm3 : 0.5

> 100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.9...5.5

Del.quantity cm3/ : 1.6...2.2

> 100 s: (1.3...2.5)

Spread cm3 : 0.6

> 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 189.0...191.0

> 1000 : (186.0...194.0)

Spread cm3 : 5.00

> 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.75

Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 800
Rack travel mm : 11.70...11.80

Measurement
Speed 1/min : 400

1st pressure hPa : 350
Rack travel in m: 11.15...11.35
2nd pressure hPa : 200
Rack travel in m: 10.50...10.70
3rd pressure hPa : -
Rack travel in m: 9.60...9.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 182.0...186.0
> 1000 s: (179.0...189.0)
Spread cm3 : 8.00
> 1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
> 1000 s: (145.5...154.5)
Spread cm3 : -
> 1000 s: (-)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
> 1000 s: (123.0...131.0)
Spread cm3 : 8.00

> 1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 10.75
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
> 1000 s: (206.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 4.9.96
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 646 796

Injection pump
Pump designation : PE6P120A320LS7858
EP type number : 0 412 626 875
Governor
Governor design. : RQ300/1050PA1030-5
Governor no. : 0 421 801 665

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401LA

1st version kW : 200.0
Rated speed >: 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 1 688 901 105

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall>thickness
x Length mm> : 8.00X1.50X1000

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
> : (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 18.9...19.1

> 100 s: (18.6...19.4)

Spread cm3 : 0.5

> 100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.9...5.5

Del.quantity cm3/ : 1.6...2.2

> 100 s: (1.3...2.5)

Spread cm3 : 0.6

> 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 88...96

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 189.0...191.0

> 1000 : (186.0...194.0)

Spread cm3 : 5.00

> 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.75

Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 1050
Pressure hPa : 800
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 400

1st pressure hPa : 350
Rack travel in m: 10.90...11.00
2nd pressure hPa : 200
Rack travel in m: 10.10...10.30
3rd pressure hPa : -
Rack travel in m: 9.60...9.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 182.0...186.0
> 1000 s: (179.0...189.0)
Spread cm3 : 8.00
> 1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
> 1000 s: (145.5...154.5)
Spread cm3 : -
> 1000 s: (-)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
> 1000 s: (123.0...131.0)
Spread cm3 : 8.00

> 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
>
full load rack tr: 10.75
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...65.0
> 1000 s: (41.0...69.0)
Rack travel in mm : 9.60...10.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 h
Edition : 03.12.92
Replaces : 16.2.90
Test oil : ISO-4113

Combination no. : 0 402 646 824

Injection pump
Pump designation : PE6P120A320RS7111
EP type number : 0 412 626 809
Governor
Governor design. : RQ750PA758
Governor no. : 0 421 801 297

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DS 9 46,47

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 1 688 901 019

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall>thickness
x Length mm> : 6.00X1.50X600

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 5.00...5.10
> : (4.95...5.15)
Rack travel in mm : 9.00...12.00

B05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 17.7...17.9

> 100 s: (17.4...18.2)

Spread cm3 : 0.6

> 100 s: (0.9)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Del.quantity : 177.0...179.0
> 1000 : (174.0...182.0)
Spread cm3 : 6.00
> 1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 16.5

Testing:

1st rack travel in: 11.30
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 784...797
5th rack travel in: 850
Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than
>
full load rack tr: 11.30
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...290.0
Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version
Rack travel in mm : 5.80...6.00
Spread cm3 : 4.00
> 1000 s: (7.00)

Remarks:

:

APPLICATION

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
Edition : 16.03.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 881
Injection pump
Pump designation : PE6P120A720RS7126
EP type number : 0 412 626 815
Governor
Governor design. : RQV300...900PA795-4
Governor no. : 0 421 813 888

Customer-spec. information
Customer : SCANIA

Engine : DS 11

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42
Overflow valve
> : 1 417 413 025

Inlet press., bar : 2.30

Test nozzle holder
assembly> : 1 688 901 019

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall>thickness : 6.00X1.50X600
x Length mm>

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
> : (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 14.10...14.20
Del.quantity cm3/ : 23.4...23.6
> 100 s: (23.1...23.9)
Spread cm3 : 0.6
> 100 s: (0.9)

2nd speed rpm : 200
Rack travel in mm : 4.4...4.6
Del.quantity cm3/ : 1.5...1.9
> 100 s: (-)
Spread cm3 : 0.3
> 100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.30...1.70
2nd speed rpm : 350
travel mm : 1.90...2.50
3rd speed rpm : 650
travel mm : 4.70...5.30
4th speed rpm : 945
travel mm : 7.90...8.10
5th speed rpm : 1045
travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 970
Rack travel in mm : 11.50...13.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 234.0...236.0
> 1000 : (231.0...239.0)
Spread cm3 : 6.00

> 1000 : (9.00)

RATED SPEED

1st version
Control lever
position> degrees: 93...101

Testing:

1st rack travel in: 13.10
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1030...1060
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69

Testing:

Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 300
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 330...390

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.10...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.60
2nd pressure hPa : 440
Rack travel in m: 12.00...12.10
3rd pressure hPa : 270
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 950
Del.quantity cm3/ : 228.0...236.0
> 1000 s: (226.0...238.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 152.0...154.0
> 1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 12.80
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...180.0
Rack travel in mm : 10.20...10.60

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:

:

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
Edition : 16.08.93
Replaces : 10.92
Test oil : ISO-4113
Combination no. : 0 402 646 937
Injection pump
Pump designation : PE6P120A720RS71880
EP type number : 0 412 626 846
Governor
Governor design. : RQV200...950PA725-7
Governor no. : 0 421 813 803

Customer-spec. information
Customer : SCANIA

Engine : DSC11 21

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42
Overflow valve
> : 1 417 413 025
Inlet press., bar : 2.50
Test nozzle holder
assembly> : 1 688 901 104
Opening
pressure, bar> : 250...253
Orifice plate
diameter mm> : 0,7

Test lines : 1 680 750 008

Outside diameter
x Wall>thickness
x Length mm> : 6.00X2.00X600

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
> : (4.35...4.55)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 21.9...22.1

> 100 s: (21.6...22.4)

Spread cm3 : 0.8

> 100 s: (1.2)

2nd speed rpm : 225.0

Rack travel in mm : 4.6...5.2

Del.quantity cm3/ : 1.5...1.9

> 100 s: (1.2...2.2)

Spread cm3 : 0.4

> 100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 1.20...1.60

2nd speed rpm : 350

travel mm : 2.40...3.00

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1045

travel mm : 8.40...8.60

5th speed rpm : 1125

travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 219.0...221.0

> 1000 : (216.0...224.0)

Spread cm3 : 8.00

> 1000 : (12.00)

RATED SPEED

1st version
Control lever
position> degrees: 108...116

Testing:

1st rack travel in: 11.70
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 58...66

Testing:

Speed rpm : 100
Minimum rack trave: 6.20
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 350...410

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.70
2nd pressure hPa : 440
Rack travel in m: 12.00...12.10
3rd pressure hPa : 270
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 950
Del.quantity cm3/ : 202.0...210.0
> 1000 s: (200.0...212.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 151.0...155.0
> 1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 11.70
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...180.0
> 1000 s: (146.0...184.0)
Rack travel in mm : 10.30...10.70

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 28.10.93
Replaces : 08.92
Test oil : ISO-4113

Combination no. : 0 402 648 931

Injection pump
Pump designation : PE8P120A320LS7847
EP type number : 0 412 628 863
Governor
Governor design. : RQ300/950PA1032-1
Governor no. : 0 421 801 646

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed > : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 1 688 901 105

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall>thickness
x Length mm> : 8.00X2.50X1000

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
> : (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 23.6...23.8

> 100 s: (23.3...24.1)

Spread cm3 : 0.6

> 100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.0...1.6
> 100 s: (0.7...1.9)
Spread cm3 : 0.8
> 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 236.0...238.0
> 1000 : (233.0...241.0)
Spread cm3 : 6.00
> 1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 360...400

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 13.50...13.60
2nd speed rpm : 950
Rack travel in m: 13.00...13.20
3rd speed rpm : 800
Rack travel in m: 13.50...13.60
4th speed rpm : 875
Rack travel in m: 13.25...13.45

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 1200
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 400

1st pressure hPa : 650
Rack travel in m: 12.90...13.00
2nd pressure hPa : 300
Rack travel in m: 11.35...11.55
3rd pressure hPa : -
Rack travel in m: 10.45...10.75

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 214.0...218.0
> 1000 s: (211.0...221.0)
Spread cm3 : 8.00
> 1000 s: (12.0)
Aneroid pressure h: 650
Speed rpm : 400
Del.quantity cm3/ : 196.5...199.5
> 1000 s: (193.5...202.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
> 1000 s: (131.0...139.0)
Spread cm3 : 8.00
> 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
>
full load rack tr: 12.10
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...65.0
> 1000 s: (41.0...69.0)
Rack travel in mm : 10.50...10.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 4.9.96
Replaces : 6.94
Test oil : ISO-4113
Combination no. : 0 402 648 955
Injection pump
Pump designation : PE8P120A320LS7859
EP type number : 0 412 628 869
Governor
Governor design. : RQ300/950PA1031-9
Governor no. : 0 421 801 675

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 320.0
Rated speed >: 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 1 628 901 105

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall>thickness : 8.00X1.50X1000
x Length mm>

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
> : (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5- 4- 1

Phasing : 0-45-90-135-180-225-270-315
Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 550
Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 24.4...24.6
> 100 s: (23.7...24.9)

Spread cm3 : 0.6
> 100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 4.9...5.5
Del.quantity cm3/ : 1.6...2.2
> 100 s: (1.3...2.5)
Spread cm3 : 0.6
> 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 94...102
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1000
Del.quantity : 244.0...246.0
> 1000 : (241.0...249.0)
Spread cm3 : 6.00
> 1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.75
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 400

1st pressure hPa : 550
Rack travel in m: 13.00...13.20
2nd pressure hPa : 250
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 9.55...9.85

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 233.0...237.0
> 1000 s: (232.0...242.0)
Spread cm3 : 8.00
> 1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 208.5...211.5
> 1000 s: (205.5...214.5)
Spread cm3 : -
> 1000 s: (-)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
> 1000 s: (131.0...139.0)

Spread cm3 : 8.00
> 1000 s: (12.0)

BREAKAWAY

1st version

imm rack travel less than
>
full load rack tr: 12.75
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...280.0
> 1000 s: (256.0...284.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 i 1
 Edition : 01.03.93
 Replaces : 21.1.93
 Test oil : ISO-4113

Combination no. : 0 402 746 902

Injection pump
 Pump designation : PES6P120A720RS7224
 EP type number : 0 412 726 840
 Governor
 Governor design. : RQV275...1100PA975-1
 K
 Governor no. : 0 421 815 267

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.41.320

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C> : 38...42

Overflow valve
 > : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly> : 1 688 901 105

Opening
 pressure, bar> : 207...210

Orifice plate
 diameter mm> : 0,8

Test lines : 1 680 750 008

Outside diameter
 x Wall>thickness
 x Length mm> : 6.00X2.00X600

(A) Injection pump setting values
 > Insp. values in parentheses
 > Set equal delivery quant.
 > per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
 > : (5.05...5.25)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 20.9...21.1

> 100 s: (20.6...21.4)

Spread cm3 : 0.5

> 100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.1...5.5

Del.quantity cm3/ : 3.2...3.8

> 100 s: (2.9...4.1)

Spread cm3 : 0.8

> 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
 travel mm : 10.30...10.50

2nd speed rpm : 275
 travel mm : 1.30...1.50

3rd speed rpm : 450
 travel mm : 3.40...4.00

4th speed rpm : 750
 travel mm : 5.90...6.30

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 209.0...211.0

> 1000 : (206.0...214.0)

Spread cm3 : 5.00
> 1000 : (9.00)

RATED SPEED

1st version
Control lever
position> degrees: 115...123

Testing:

1st rack travel in: 10.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72

Testing:

Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 275
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 270...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 700
Rack travel in m: 9.90...10.10
3rd speed rpm : 900
Rack travel in m: 10.70...10.90
4th speed rpm : 400
Rack travel in m: 9.30...9.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 7.70...7.90
2nd pressure hPa : 600
Rack travel in m: 10.60...10.70
3rd pressure hPa : 420

Rack travel in m: 9.10...9.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 188.0...194.0
> 1000 s: (185.0...197.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 120.0...122.0
> 1000 s: (117.0...125.0)

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 10.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...180.0
> 1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.10...5.50
Del.quantity cm3/ : 32.0...38.0
> 1000 s: (29.0...41.0)
Spread cm3 : 8.00
> 1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
Edition : 16.11.93
Replaces : 18.12.92
Test oil : ISO-4113

Combination no. : 0 402 746 937

Injection pump
Pump designation : PES6P120A72ORS7268
EP type number : 0 412 726 884
Governor
Governor design. : RQ275/1100PA915-2
Governor no. : 0 421 801 671

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8460.41.603

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly> : 1 688 901 105

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall>thickness
x Length mm> : 8.00X1.50X600

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
> : (5.05...5.25)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 19.5...19.7

> 100 s: (19.2...20.0)

Spread cm3 : 0.5

> 100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 2.0...2.6

> 100 s: (1.7...2.9)

Spread cm3 : 0.8

> 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 195.0...197.0

> 1000 : (192.0...200.0)

Spread cm3 : 5.00

> 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.90

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 6.3

Testing:
Speed rpm : 100
Minimum rack travel: 7.80
Speed rpm : 275
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 345...385

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.90...12.00
2nd speed rpm : 550
Rack travel in m: 11.80...12.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.90...12.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 310
Rack travel in m: 10.80...10.90
3rd pressure hPa : 240
Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 550
Del.quantity cm3/ : 213.0...219.0
> 1000 s: (210.0...222.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 111.0...113.0
> 1000 s: (108.0...116.0)

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 10.90
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 95.0...120.0
> 1000 s: (91.0...129.0)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : NAV
Edition : 13.01.94
Replaces : 6.93
Test oil : ISO-4113

Combination no. : 0 402 746 940

Injection pump
Pump designation : PES6P120A320LS7284
EP type number : 0 412 726 891
Governor
Governor design. : RQV350...1000PA1054K
Governor no. : 0 421 815 337

Customer-spec. information
Customer : NAV

Engine : DTA-531

1st version kW : 224.0
Rated speed >: 2000
Rated speed >: 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C> : 38...42

Overflow valve
> : 1 417 413 076

Inlet press., bar : 2.80

Test nozzle holder
assembly> : 1 688 901 101

Opening
pressure, bar> : 207...210

Orifice plate
diameter mm> : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall>thickness
x Length mm> : 6.00X2.00X600

(A) Injection pump setting values
> Insp. values in parentheses
> Set equal delivery quant.
> per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95
> : (2.80...3.00)
Rack travel in mm : 14.00...17.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - °> : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 21.8...22.0

> 100 s: (21.5...22.3)

Spread cm3 : 0.8

> 100 s: (1.2)

2nd speed rpm : 325
Rack travel in mm : 6.6...6.8
Del.quantity cm3/ : 2.8...3.4
> 100 s: (2.6...3.6)
Spread cm3 : 0.5
> 100 s: (0.9)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.40...1.60
2nd speed rpm : 500
travel mm : 3.70...4.10
3rd speed rpm : 800
travel mm : 6.30...6.70
4th speed rpm : 1000
travel mm : 8.60...8.80
5th speed rpm : 1150
travel mm : 10.50...10.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1500
Del.quantity : 218.0...220.0
> 1000 : (215.0...223.0)
Spread cm3 : 8.00
> 1000 : (12.0)

RATED SPEED

1st version
Control lever
position> degrees: 114...126

Testing:
1st rack travel in: 13.30
Speed rpm : 1050...1080
2nd rack travel in: 4.00
Speed rpm : 1170...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...82

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 325
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 330...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 14.3...14.4
2nd speed rpm : 650
Rack travel in m: 14.2...14.4
3rd speed rpm : 500
Rack travel in m: 13.3...13.7
4th speed rpm : 800
Rack travel in m: 14.2...14.4

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1000
Pressure hPa : 1500
Rack travel mm : 14.30...14.40

Measurement
Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 9.20...9.60
2nd pressure hPa : 395
Rack travel in m: 10.70...10.80
3rd pressure hPa : 1010
Rack travel in m: 13.0...13.4

START CUT-OUT

Speed 1/min : 265 (275)

B20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 1500
Del.quantity cm3/ : 225.5...231.5
> 1000 s: (222.5...234.5)
Spread cm3 : 8.00
> 1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 800
Del.quantity cm3/ : 88.0...92.0
> 1000 s: (86.0...94.0)

BREAKAWAY

1st version
1mm rack travel less than
>
full load rack tr: 13.30
Speed rpm : 1050...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...165.0
> 1000 s: (115.0...175.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.60...6.80
Del.quantity cm3/ : 28.0...34.0
> 1000 s: (26.0...36.0)
Spread cm3 : 8.00
> 1000 s: (12.00)

Remarks:
: NAVISTAR #1819915C91

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:
Sliding-sleeve position = 37.0 mm
Delivery-valve spring pre-tension =
6.30...6.40 mm.
Permissible alteration from 6.00...6.70
mm

Start-of-delivery blocking 8,75° after
start of delivery of cylinder no. 1.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 14.08.96
Calibrating oil : ISO-4113

Injection pump : VE4/11F2250R676-2
Type number : 0 460 414 135
Customer Part-No. :

Customer-specific information
Customer : VOLVO PENTA

Engine : TAMD22
Speed 1/min: 74

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 54.00...56.00
Electronically> : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 027

Opening
Pressure> bar: 204.00...210.00

Perforated-plate
diameter> mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Start of delivery block
Piston stroke mm: 1,1
> mm: ±0,02
Outlet > : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 1200
Setting value mm: 2.20...2.60

Supply-pump pressure

Speed 1/min: 1200
Charge press hPa: 1200
Setting value bar: 6.30...6.80

Full-load del. with charge press.:

Speed 1/min: 1600
Charge press. hPa: 1200
Del. quantity cm3/
> 1000S.: 57.0...58.0
Dispersion cm3/: 2.5
> 1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 800
Del. quantity cm3/
> 1000S.: 31.5...32.5

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
> 1000S.: 9.0...11.0
Del. quantity cm3/: 3.0
> 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2330
Charge press hPa: 1200
Del. quantity cm3/
> 1000S.: 47.0...53.0

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...110.00
mind> 1000S.: 50.00

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: -
Inj.-qty. cm3/
differenre> 1000S.: - 7,0...9,0 *
SP press.-dif.measurement

1st speed 1/min: 1250
Charge press hPa: -
Supply pump
pressure>

difference> bar: - 0.1...0.3 *

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 1200
TD travel mm: 0.9...1.7
> mm: (0.7...1.9)
2nd speed 1/min: 1900
Charge press hPa: 1200
TD travel mm: 5.5...6.3
> mm: (5.3...6.5)
3rd speed 1/min: 1200
Charge press hPa: 1200
TD travel mm: 2.2...2.6
> mm: (1.8...3.0)

Supply-pump pressure characteristic:

1st speed 1/min: 750
Charge press. hPa: 1200
Supply-pump pressure> bar: 5.8...6.4
2nd speed 1/min: 1200
Charge press. hPa: 1200
Supply-pump pressure> bar: 6.3...6.9
3rd speed 1/min: 2250
Charge press. hPa: 1200
Supply-pump pressure> bar: 8.6...9.2

Overflow quantity at overflow valve

1st speed 1/min: 550
Charge press. hPa: -
Overflow : 55.60...100.00
quantity> cm3/10s: (40.60...115.00)
2nd speed 1/min: 2250
Charge press. hPa: -
Overflow : 83.40...166.80
quantity> cm3/10s: (68.40...181.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
Charge-air pressure-setting point> hPa: 300
Del. quantity cm3/: 46.0...47.0
> 1000S.: (44.5...48.5)
2nd speed 1/min: 2550
Charge press. hPa: 1200
Del. quantity cm3/: 0.0...3.0
> 1000S.: -
3rd speed 1/min: 2440
Charge press. hPa: 1200

Del. quantity cm3/: 0,0...30,0
> 1000S.: -
4th speed 1/min: 2330
Charge press. hPa: 1200
Del. quantity cm3/: 47.0...53.0
> 1000S.: (44.0...56.0)
5th speed 1/min: 2250
Charge press. hPa: 1200
Del. quantity cm3/: 58.0...62.0
> 1000S.: (57.0...63.0)
6th speed 1/min: 1600
Charge press. hPa: 1200
Del. quantity cm3/: 57.0...58.0
> 1000S.: (56.2...58.8)
7th speed 1/min: 800
Charge press. hPa: -
Del. quantity cm3/: 31.5...32.5
> 1000S.: (29.7...34.3)

Mech. shutoff:

1st speed 1/min: 2250
Charge press. hPa: 1200
Del. quantity cm3/: 0.00...3.00
> 1000S.: -

Electr. shutoff:

1st speed 1/min: 425
Charge press. hPa: -
Del. quantity cm3/: 0.00...3.00
> 1000S.: -

Idle delivery:

1st speed 1/min: 425
Del. quantity cm3/: 9.0...11.0
> 1000S.: (6.0...14.0)
Dispersion cm3/: 3.0
> 1000S.: (3.0)
2nd speed 1/min: 475
Del. quantity cm3/: 1.5...6.5
> 1000S.: (0.0...8.0)
3rd speed 1/min: 580
Del. quantity cm3/: 0.0...3.0
> 1000S.: -

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Charge press. hPa: -
Inj.-qty. cm3/ : - 9,0..15.0 #
difference> 1000S.: (-0.8..16.0) #
2nd speed 1/min: 1250
Charge press. hPa: -
Inj.-qty. cm3/ : 4.0...6.0 'Z
difference> 1000S.: -

TD-travel dif.measurement:

1st speed 1/min: 1250
Charge press. hPa: -
TD-travel : -0.8...1.2 #
difference> mm: -
2nd speed 1/min: 1250
Charge press. hPa: -
TD-travel : -1.3...1.7 'z

Automatic starting fuel delivery:

1st speed 1/min: 170
Del. quantity cm3/: 60.0...110.0
> 1000S.: -

2nd speed 1/min: 300
Del. quantity cm3/: 55.0...85.0
> 1000S.: -

4th speed 1/min: 100
Del. quantity cm3/: 50.0...110.0
> 1000S.: -

Shutoff electromagnet:

Cut-in
>min voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation

K	mm: 3,2...3,4
KF	mm: KOT
MS1	mm: 1,65
LDA stroke	mm: 7,0
Ya	mm: 23.0...27.0
Yb	mm: 52.0...66.0

Remarks:

:
:

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

Z = Absolute delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ROVER
Edition : 14.08.96
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R509-3
Type number : 0 460 414 136
Customer Part-No. :

Customer-specific information
Customer : GEMINI 3 TA
Speed 1/min: 83

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 54.00...56.00
Electronically> : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 116

Opening
Pressure> bar: 204.00...210.00

Perforated-plate
diameter> mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Start of delivery block
Piston stroke mm: 1,4
> mm: ±0,02
Outlet > : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1600

Charge press. hPa: 1000
Setting value mm: 3,40...3.80
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1600
Charge press hPa: 1000
Setting value bar: 6.50...7.10
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 65,7...66.7
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 3.0
> 1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 37.3...38.3
Shutoff
electromagnet>Volt: 12

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
> 1000S.: 9.5...13.5
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 4.0
> 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2200
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 50.5...54.5
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 90.5...105.5
mind> 1000S.: 90.5
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1400
 Charge press hPa: 1000
 TD travel mm: 1.7...2.5
 > mm: (1.3...3.0)
 electromagnet>Volt: 12
 2nd speed 1/min: 1600
 Charge press hPa: 1000
 TD travel mm: 3.4...3.8
 > mm: (2,8...4.4)
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 2000
 Charge press hPa: 1000
 TD travel mm: 6.0...6.8
 > mm: (5.5...7.3)

Supply-pump pressure characteristic:

1st speed 1/min: 1400
 Charge press. hPa: 1000
 Supply-pump pressure> bar: 5.8...6.4
 Shutoff
 electromagnet>Volt: 12
 2nd speed 1/min: 1600
 Charge press. hPa: 1000
 Supply-pump pressure> bar: 6.5...7.1
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 2000
 Charge press. hPa: 1000
 Supply-pump pressure> bar: 7.7...8.3
 Shutoff
 electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet>Volt: 12
 Overflow : 55.60...100.00
 quantity> cm3/10s: (40.60...115.00)
 2nd speed 1/min: 2000
 Charge press. hPa: 1000
 Shutoff
 electromagnet>Volt: 12
 Overflow : 83.40...166.80
 quantity> cm3/10s: (68.40...181.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800

Charge-air pressure-setting point> hPa: 300

LDA-stroke mm: 6.4

Shutoff

electromagnet>Volt: 12
 Del. quantity cm3/: 37.3...38.3
 > 1000S.: (34.6...41.0)
 2nd speed 1/min: 2600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.0...3.0
 > 1000S.: -
 3rd speed 1/min: 2400
 Charge press. hPa: 1000
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 11.0...21.0
 > 1000S.: (10.0...22.0)
 4th speed 1/min: 2200
 Charge press. hPa: 1000
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 50.5...54.5
 > 1000S.: (48.0...57.0)
 5th speed 1/min: 2000
 Charge press. hPa: 1000
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 63.5...67.5
 > 1000S.: (62.5...68.5)
 6th speed 1/min: 1400
 Charge press. hPa: 1000
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 65,7..66.7
 > 1000S.: (63.4...69.0)
 7th speed 1/min: 900
 Charge press. hPa: 1000
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 61.0...66.0
 > 1000S.: (59.3...67.3)
 8th speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 37.3...38.3
 > 1000S.: (34.6...41.0)

Electr. shutoff:

1st speed 1/min: 350
 Charge press. hPa: -
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: -
 Shutoff
 electromagnet>volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 9.5...13.5
> 1000S.: (6.5...16.5)
Dispersion cm³/: 4.0
> 1000S.: (4.0)
2nd speed 1/min: 500
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 0.0...3.0
> 1000S.: -

Part-load del. at 3rd inj.-qty.

stop (EGR set)

Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 38.0...40.0
> 1000S.: (36.0...42.0)

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 95.0...140.0
> 1000S.: VH → VL

2nd speed 1/min: 350
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 30.0...70.0
> 1000S.: VH → VL

3rd speed 1/min: 100
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 90.5...105.5
> 1000S.: VH → VL

4th speed 1/min: 100
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 37.5...52.5
> 1000S.: VH → LL

Shutoff electromagnet:

Cut-in
>min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3,2...3,4
KF	mm: 8,2...8,6
MS1	mm: 1,45
LDA stroke	mm: 6.4
ALDA stroke	mm: GST 76.9
Ya	mm: 42.3...46.3
Yb	mm: 50.0...61.0

Potentiometer adjustment:

Supply voltage
pot. > volt: 5.0
Output volt
pot. > volt: 3.1

Remarks:

:
:
Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ROVER
Edition : 14.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2250L619-1
Type number : 0 460 414 143
Customer Part-No. :

Customer-specific information
Customer : ROVER

Engine : 2.01 TCIE-M
Speed 1/min: 72

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 54.00...56.00
Electronically> : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 116

Opening
Pressure> bar: 204.00...210.00

Perforated-plate
diameter> mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1500
Setting value mm: 7.2...7.6

C01

Timing valve Volt: -
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1500
Setting value bar: 6.7...7.3
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1500
Del. quantity cm3/
> 1000S.: 59.5...60.5
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 3.0
> 1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
> 1000S.: 42.0...43.0
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
> 1000S.: 4.0...8.0
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 4.0
> 1000S.: (4.5)

Full-load speed regulation

Speed 1/min: 2580
Charge press hPa: 1500
Del. quantity cm3/
> 1000S.: 18.0...22.0
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 87.5...104.5 VL
mind> 1000S.: 87.5

Timing valve Volt: -
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
Charge press hPa: 1500
TD travel mm: 6.2...7.0
> mm: (5.7...7.5)
Timing valve Volt: -
electromagnet>Volt: 12
2nd speed 1/min: 1000
Charge press hPa: 1500
TD travel mm: 7.2...7.6
> mm: (6.6...8.2)
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1400
Charge press hPa: 1500
TD travel mm: 8.3...9.0
> mm: (7.8...9.6)
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
4th speed 1/min: 2000
Charge press hPa: 1500
TD travel mm: 0.0...0.6
> mm: -
Timing valve Volt: 12
Shutoff
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Charge press. hPa: 1500
Supply-pump
pressure> bar: 6.4...7.0
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1500
Supply-pump
pressure> bar: 6.7...7.3
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1400
Charge press. hPa: 1500
Supply-pump
pressure> bar: 7.2...7.8
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 700
Charge press. hPa: 1500
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
Overflow : 55.60...100.00
quantity> cm3/10s: (40.60...115.00)
2nd speed 1/min: 2000
Charge press. hPa: 1500
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
Overflow : 83.40...166.80
quantity> cm3/10s: (68.40...181.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point> hPa: 500
LDA-stroke mm: 5.0
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 53,5...54,5
> 1000s.: (50.8...57.2)
2nd speed 1/min: 2670
Charge press. hPa: 1500
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.0...3.0
> 1000s.: -
3rd speed 1/min: 2580
Charge press. hPa: 1500
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 18.0...22.0
> 1000s.: (15.0...25.0)
4th speed 1/min: 2450
Charge press. hPa: 1500
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 42.0...50.0
> 1000s.: (40.0...52.0)
5th speed 1/min: 2000
Charge press. hPa: 1500
Timing valve Volt: -
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 58.0...62.0
> 1000s.: (66.8...63.2)
6th speed 1/min: 1250
Charge press. hPa: 1500

Timing valve Volt: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 59.5...60.5
 > 1000S.: (67.2...62.8)
 7th speed 1/min: 1000
 Charge press. hPa: 1500
 Timing valve Volt: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 60.5...65.5
 > 1000S.: (59.0...67.0)
 8th speed 1/min: 700
 Charge press. hPa: -
 Timing valve Volt: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 42.0...43.0
 > 1000S.: (39.3...45.7)

Electr. shutoff:

1st speed 1/min: 375
 Charge press. hPa: -
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: -
 Shutoff
 electromagnet>volt: -
 Timing valve Volt: -

Idle delivery:

1st speed 1/min: 375
 Timing valve Volt: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 4.0...8.0
 > 1000S.: (2.0...10.0)
 Dispersion cm3/: 4.0
 > 1000S.: (4.5)
 2nd speed 1/min: 480
 Timing valve Volt: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 0.0...3.0
 > 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 180
 Timing valve Volt: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 85.0...135.0
 > 1000S.: VH → VL

2nd speed 1/min: 320
 Timing valve Volt: -

Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 15.0...65.0
 > 1000S.: VH → VL

3rd speed 1/min: 100
 Timing valve Volt: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 88.5...104.5
 > 1000S.: VH → VL

4th speed 1/min: 100
 Timing valve Volt: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 42.5...57.5
 > 1000S.: VH → LL

Shutoff electromagnet:

Cut-in
 >min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: -
KF	mm: -
MS	mm: -
MS1	mm: -
SVS max.	mm: -
LDA stroke	mm: 5.0
Ya	mm: 35.8...39.8
Yb	mm: 48.1...57.9

Remarks:

:
 :
 Ya = Distance between VE flange and
 speed-control lever in idle
 position
 Measurement point = edge of control
 lever on drive end

Yb = Distance between VE flange and
 speed-control lever in rated speed
 position
 Measurement point = edge of control
 lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAX
Edition : 28.05.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R687
Type number : 0 460 414 144
Customer Part-No. :

Customer-specific information
Customer : MAXION

Engine : FORD DELTA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 54.00...56.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 116

Opening
Pressure> bar: 204.00...210.00

Perforated-plate
diameter> mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Start of delivery block
Piston stroke mm: 1.54
Outlet > : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1600

C04

Charge press. hPa: 1200
Setting value mm: 3.10...3.30
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1600
Charge press hPa: 1200
Setting value bar: 7.30...7.90
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1150
Charge press. hPa: 1200
Del. quantity cm3/
> 1000S.: 66.5...67.5

Shutoff
electromagnet>Volt: 12
Dispersion cm3/
> 1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 48.5...49.5

Shutoff
electromagnet>Volt: 12

Low-idle speed regulation

Speed 1/min: 380
Del. quantity cm3/
> 1000S.: 8.5...12.5

Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 4.0
> 1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 2150
Charge press hPa: 1200
Del. quantity cm3/
> 1000S.: 47.0...51.0

Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 61.0...111.0
mind> 1000S.: 61.0

Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1300
Charge press hPa: 1200
TD travel mm: 0.80...1.40
> mm: (0.50...1.70)
electromagnet>Volt: 12
2nd speed 1/min: 1600
Charge press hPa: 1200
TD travel mm: 3.10...3.30
> mm: (2.70...3.70)
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1900
Charge press hPa: 1200
TD travel mm: 4.60...5.20
> mm: (4.30...5.50)
Shutoff
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1200
Supply-pump pressure> bar: 3.90...4.50
Shutoff
electromagnet>Volt: 12
2nd speed 1/min: 1300
Charge press. hPa: 1200
Supply-pump pressure> bar: 6.40...7.00
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1600
Charge press. hPa: 1200
Supply-pump pressure> bar: 7.30...7.90
Shutoff
electromagnet>Volt: 12
4th speed 1/min: 1900
Charge press. hPa: 1200
Supply-pump pressure> bar: 8.30...8.90
Shutoff
electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 500
Charge press. hPa: 1200
Shutoff
electromagnet>Volt: 12
Overflow : 88.80...133.30
quantity> cm³/10s: (73.80...148.30)
2nd speed 1/min: 1950
Charge press. hPa: 1200
Shutoff

electromagnet>Volt: 12
Overflow : 111.10...194.80
quantity> cm³/10s: (96.10...209.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point> hPa: 600
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 66.0...67.0
> 1000s.: (63.5...69.5)
2nd speed 1/min: 2460
Charge press. hPa: 1200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
> 1000s.: -
3rd speed 1/min: 2300
Charge press. hPa: 1200
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 22.0...32.0
> 1000s.: (21.0...33.0)
4th speed 1/min: 2150
Charge press. hPa: 1200
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 47.00...51.00
> 1000s.: (44.00...54.00)
5th speed 1/min: 1950
Charge press. hPa: 1200
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 66.5...70.5
> 1000s.: (65.5...71.5)
6th speed 1/min: 1150
Charge press. hPa: 1200
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 66.5...67.5
> 1000s.: (64.5...69.5)
7th speed 1/min: 900
Charge press. hPa: 1200
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 67.5...72.5
> 1000s.: (66.0...74.0)
8th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 48.5...49.5
> 1000s.: (46.0...52.0)

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
> 1000S.: (0.00...3.00)

Shutoff
electromagnet>volt: -

Idle delivery:

1st speed 1/min: 380
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 8.5...12.5
> 1000S.: (5.5...15.5)

Dispersion cm³/: 4.0
> 1000S.: (5.0)

2nd speed 1/min: 340
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 22.5...30.5
> 1000S.: (19.5...33.5)

3rd speed 1/min: 450
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 0.00...3.00
> 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 34.00...74.00
> 1000S.: -

2nd speed 1/min: 250
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 30.00...80.00
> 1000S.: -

Shutoff electromagnet:

Cut-in
>min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 2.7...2.9
KF mm: KOT
MS1 mm: 1.3...1.6
Ya mm: 39.0...43.0
Yb mm: 56.5...66.5

Remarks:

:
:

Ya = Distance between VE flange and

C06

speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 14.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R624-5
Type number : 0 460 414 151
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5l DI SWISS
Speed 1/min: 51

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 114

Opening
Pressure> bar: 204.00...210.00

Perforated-plate
diameter> mm: 0,4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Start of delivery block
Piston stroke mm: 0,52
> mm: +0,02(0,06)
Outlet > : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2,60...2,80
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 7,10...7.70
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 28,3...28,7 F
Shutoff
electromagnet>Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
> 1000S.: 9,50...11,50
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 3.0
> 1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
> 1000S.: 25.00...27,00
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 3.0
> 1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 25.00...65.00
mind> 1000S.: 25.00
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,1...1,9
> mm: (0,6...2,4)
electromagnet>Volt: 12
2nd speed 1/min: 1250

TD travel mm: 2,60...2.80
> mm: (2,10...3,30)
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 2000
TD travel mm: 6,00...6,80
> mm: (5,50...7,30)

Shutoff
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure> bar: 5.40...6,00
Shutoff
electromagnet>Volt: 12
2nd speed 1/min: 1150
Supply-pump
pressure> bar: 6.90...7.50
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1250
Supply-pump
pressure> bar: 7.10...7.70
Shutoff
electromagnet>Volt: 12
4th speed 1/min: 2000
Supply-pump
pressure> bar: 8.70...9.30
Shutoff
electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 500
Shutoff
electromagnet>Volt: 12
Overflow : 97.30...141.70
quantity> cm3/10s: (82.30...156.70)
2nd speed 1/min: 1950
Shutoff
electromagnet>Volt: 12
Overflow : 115.30...184.80
quantity> cm3/10s: (100.30...199.80)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0,0...5.0
> 1000S.: -
3rd speed 1/min: 2300
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 9.0...15.0
> 1000S.: (6.0...18.0)
4th speed 1/min: 2200

Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 25.0...27.0
> 1000S.: (21,0...31,0)
5th speed 1/min: 1950
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 40.3...42.7 D
> 1000S.: (39.5...44.0) D
6th speed 1/min: 1700
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 39.8...42.2
> 1000S.: (38.5...43.5)
7th speed 1/min: 1150
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 35.5...36.5 E
> 1000S.: (33.5...38.5) E
8th speed 1/min: 500
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 28.3...28.7
> 1000S.: (25.5...31.5)

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm3/: 0.00...3.00
> 1000S.: (0.00...3.00)
Shutoff
electromagnet>volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 9.5...11.5
> 1000S.: (6.5...14.5)
Dispersion cm3/: 3.0
> 1000S.: (4.0)
2nd speed 1/min: 500
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 0.00...6.00
> 1000S.: (0.00...6.00)

Part-load del.at 3rd inj.-qty.

stop (EGR set)

Spacing mm: 20,0

1st speed 1/min: 1250
Shutoff
electromagnet>Volt: 12

Del. quantity cm³/: 22.0...23.0
> 1000s.: (20,0...25.0)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 33.0...63.0

> 1000s.: -

2nd speed 1/min: 480

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 20.0...32.0

> 1000s.: -

4th speed 1/min: 100

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 25.0...65.0

> 1000s.: -

Shutoff electromagnet:

Cut-in

>min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: 8,2...8,6

MS mm: 1,6,,,2,0

HBA stroke mm: 7,2

Ya mm: 41.0...44.0

Yb mm: 63.0...75.0

Remarks:

:
:

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 14.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R624-6
Type number : 0 460 414 152
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI
Speed 1/min: 56

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 114

Opening
Pressure> bar: 204.00...210.00

Perforated-plate
diameter> mm: 0,4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Start of delivery block
Piston stroke mm: 0,52
> mm: ±0,02(0,06)
Outlet > : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2,60...2,80
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 6.90...7.50
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 25,3...25,7 F
Shutoff
electromagnet>Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
> 1000S.: 8.0...10.0
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 3.0
> 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
> 1000S.: 22.00...24,00
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 3.0
> 1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 25.00...65.00
mind> 1000S.: 25.00
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,3...2.1
> mm: (0,8...2,6)
electromagnet>Volt: 12
2nd speed 1/min: 1250

TD travel mm: 2,60...2.80
> mm: (2,10...3,30)

Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 2000
TD travel mm: 5.10...5.90
> mm: (4.60...6.40)

Shutoff
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure> bar: 5.20...5.80
Shutoff
electromagnet>Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure> bar: 6.40...7.00
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1250
Supply-pump
pressure> bar: 6.90...7.50
Shutoff
electromagnet>Volt: 12
4th speed 1/min: 2000
Supply-pump
pressure> bar: 8.60...9.20
Shutoff
electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 500
Shutoff
electromagnet>Volt: 12
Overflow : 97.30...141.70
quantity> cm³/10s: (82.30...156.70)
2nd speed 1/min: 1950
Shutoff
electromagnet>Volt: 12
Overflow : 115.30...184.80
quantity> cm³/10s: (100.30...199.80)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0,0...5.0
> 1000S.: -
3rd speed 1/min: 2200
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 22.0...24.0
> 1000S.: (18.0...28.0)
4th speed 1/min: 2140

Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 26.5...32.5
> 1000S.: (23.5...35,5)
5th speed 1/min: 1950
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 35,8...38,2 D
> 1000S.: (34.5...39.5) D
6th speed 1/min: 1700
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 36.8...39.2
> 1000S.: (35.5...40.5)
7th speed 1/min: 1000
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 33.5...34.5 E
> 1000S.: (31.5...36.5) E
8th speed 1/min: 500
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 25.3...25.7
> 1000S.: (22.5...28.5)

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
> 1000S.: (0.00...3.00)
Shutoff
electromagnet>volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 8.0...10.0
> 1000S.: (5.0...13.0)
Dispersion cm³/: 3.0
> 1000S.: (4.0)
2nd speed 1/min: 500
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 0.00...6.00
> 1000S.: (0.00...6.00)

Part-load del.at 3rd inj.-qty.

stop (EGR set)

Spacing mm: 20,0

1st speed 1/min: 1250
Shutoff
electromagnet>Volt: 12

Del. quantity cm³/: 20.8...21.8
> 1000S.: (18.8...23.8)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 33.0...63.0

> 1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 20.0...32.0

> 1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 25.0...65.0

> 1000S.: -

Shutoff electromagnet:

Cut-in

>min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: 8,2...8,6

MS mm: 1,6...2,0

HBA stroke mm: 7,7

Ya mm: 41.0...44.0

Yb mm: 63.0...75.0

Remarks:

:
:

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 14.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R624-7
Type number : 0 460 414 153
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI
Speed 1/min: 51

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 114

Opening
Pressure> bar: 204.00...210.00

Perforated-plate
diameter> mm: 0,4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Start of delivery block
Piston stroke mm: 0,52
> mm: +0,02(0,06)
Outlet > : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2,60...2,80
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 7,10...7.70
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
> 1000S.: 28,3...28,7 F
Shutoff
electromagnet>Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
> 1000S.: 9,50...11,50
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 3.0
> 1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
> 1000S.: 25.00...27,00
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 3.0
> 1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 25.00...65.00
mind> 1000S.: 25.00
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,1...1,9
> mm: (0,6...2,4)
electromagnet>Volt: 12
2nd speed 1/min: 1250

TD travel mm: 2,60...2.80
 > mm: (2,10...3,30)
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 2000
 TD travel mm: 6,00...6,80
 > mm: (5,50...7,30)
 Shutoff
 electromagnet>Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure> bar: 5.40...6,00
 Shutoff
 electromagnet>Volt: 12
 2nd speed 1/min: 1150
 Supply-pump pressure> bar: 6.90...7.50
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 1250
 Supply-pump pressure> bar: 7.10...7.70
 Shutoff
 electromagnet>Volt: 12
 4th speed 1/min: 2000
 Supply-pump pressure> bar: 8.70...9.30
 Shutoff
 electromagnet>Volt: 12
 Overflow quantity at overflow valve
 1st speed 1/min: 500
 Shutoff
 electromagnet>Volt: 12
 Overflow : 97.30...141.70
 quantity> cm3/10s: (82.30...156.70)
 2nd speed 1/min: 1950
 Shutoff
 electromagnet>Volt: 12
 Overflow : 115.30...184.80
 quantity> cm3/10s: (100.30...199.80)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 2400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0,0...5.0
 > 1000S.: -
 3rd speed 1/min: 2300
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 9.0...15.0
 > 1000S.: (6.0...18.0)
 4th speed 1/min: 2200

Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 25.0...27.0
 > 1000S.: (21,0...31,0)
 5th speed 1/min: 1950
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 40.3...42.7 D
 > 1000S.: (39.5...44.0) D
 6th speed 1/min: 1700
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 39.8...42.2
 > 1000S.: (38.5...43.5)
 7th speed 1/min: 1150
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 35.5...36.5 E
 > 1000S.: (33.5...38.5) E
 8th speed 1/min: 500
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 28.3...28.7
 > 1000S.: (25.5...31.5)

Electr. shutoff:

1st speed 1/min: 425
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: (0.00...3.00)
 Shutoff
 electromagnet>volt: -

Idle delivery:

1st speed 1/min: 425
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 9.5...11.5
 > 1000S.: (6.5...14.5)
 Dispersion cm3/: 3.0
 > 1000S.: (4.0)
 2nd speed 1/min: 500
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 0.00...6.00
 > 1000S.: (0.00...6.00)

Part-load del.at 3rd inj.-qty.

stop (EGR set)

Spacing mm: 20,0

1st speed 1/min: 1250
 Shutoff
 electromagnet>Volt: 12

Del. quantity cm³/: 22.0...23.0
> 1000s.: (20,0...25.0)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 33.0...63.0

> 1000s.: -

2nd speed 1/min: 480

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 20.0...32.0

> 1000s.: -

4th speed 1/min: 100

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 25.0...65.0

> 1000s.: -

Shutoff electromagnet:

Cut-in

>min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: 8,2...8,6

MS mm: 1,6,,,2,0

HBA stroke mm: 7,2

Ya mm: 41.0...44.0

Yb mm: 63.0...75.0

Remarks:

:
:

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 14.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/11F1800L363-1
Type number : 0 460 416 081
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : 638 BLTK
Speed 1/min: 107

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 000

Opening
Pressure> bar: 144.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 840

Start of delivery
Prestroke mm: 0,3
> (from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 3.5...3.9
Shutoff
electromagnet>Volt: 24

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 6.6...7.2
Shutoff
electromagnet>Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
> 1000S.: 58.5...59.5
Shutoff
electromagnet>Volt: 24
Dispersion cm3/: 3.5
> 1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
> 1000S.: 43.5...44.5
Shutoff
electromagnet>Volt: 24

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
> 1000S.: 10.0...14.0
Shutoff
electromagnet>Volt: 24
Del. quantity cm3/: 3.5
> 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1950
Charge press hPa: 1000
Del. quantity cm3/
> 1000S.: 36.0...42.0
Shutoff
electromagnet>Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 55.0...95.0
mind> 1000S.: 55.0
Shutoff
electromagnet>Volt: 24

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: -
Inj.-qty. cm3/

difference> 1000S.: -4.0...6.0 *
Shutoff
electromagnet>Volt: 24
SP press.-dif.measurement

1st speed 1/min: 1500
Charge press hPa: -
Supply pump
pressure>
difference> bar: -0.1...0.3 *

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 0.6...1.4
> mm: (0.3...1.7)
electromagnet>Volt: 24
2nd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 3.50...3.90
> mm: (3.00...4.40)
Shutoff
electromagnet>Volt: 24
3rd speed 1/min: 1800
Charge press hPa: 1000
TD travel mm: 4.50...5.30
> mm: (4.20...5.60)

Shutoff
electromagnet>Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure> bar: 3.5...4.1
Shutoff
electromagnet>Volt: 24
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure> bar: 6.6...7.2
> bar: -
Shutoff
electromagnet>Volt: 24
3rd speed 1/min: 1800
Charge press. hPa: 1000
Supply-pump
pressure> bar: 7.7...8.3
Shutoff
electromagnet>Volt: 24

Overflow quantity at overflow valve

1st speed 1/min: 600
Charge press. hPa: 1000

Shutoff
electromagnet>Volt: 24
Overflow : 41.70...86.1
quantity> cm3/10s: (26.70...101.1)
2nd speed 1/min: 1800
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 24
Overflow : 55.6...139.0
quantity> cm3/10s: (40.6...154.0)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600
Charge-air pressure-setting
point> hPa: 450
LDA-stroke mm: 7.1
Shutoff
electromagnet>Volt: 24
Del. quantity cm3/: 49.5...50.5
> 1000S.: (47.5...52.5)
2nd speed 1/min: 2200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.0...3.0
> 1000S.: -
3rd speed 1/min: 2080
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 24
Del. quantity cm3/: 0.0...10.00
> 1000S.: -
4th speed 1/min: 2000
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 24.0
Del. quantity cm3/: 18.0...38.0
> 1000S.: -
5th speed 1/min: 1950
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 24
Del. quantity cm3/: 36.0...42.0
> 1000S.: (35.0...43.0)
6th speed 1/min: 1800
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 24
Del. quantity cm3/: 55.0...57.0
> 1000S.: (54.0...59.0)
7th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 24
Del. quantity cm3/: 58.5...59.5
> 1000S.: (57.0...61.0)
8th speed 1/min: 600
Charge press. hPa: 1000

Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 55.5...59.5
 > 1000S.: (54.0...61.0)
 9th speed 1/min: 600
 Charge press. hPa: -
 Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 43.5...44.5
 > 1000S.: (41.5...46.5)

Mech. shutoff:

1st speed 1/min: 1800
 Charge press. hPa: 1000
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: -
 Shutoff
 electromagnet>volt: 24

Electr. shutoff:

1st speed 1/min: 400
 Charge press. hPa: -
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: -
 Shutoff
 electromagnet>volt: -

Idle delivery:

1st speed 1/min: 450
 Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 10.0...14.0
 > 1000S.: (8.0...16.0)
 Dispersion cm3/: 3.5
 > 1000S.: (3.5)
 2nd speed 1/min: 500
 Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 4.5...9.5
 > 1000S.: (2.5...11.5)
 3rd speed 1/min: 650
 Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 0.0...3.0
 > 1000S.: -

Load-dependent start of delivery:

Inj.-qty.dif.measurement:
 1st speed 1/min: 1500
 Charge press. hPa: -
 Inj.-qty. cm3/ : -13,5..20.5 #
 difference> 1000S.: -
 Shutoff
 electromagnet>Volt: 24
 2nd speed 1/min: 1500

Charge press. hPa: -
 Inj.-qty. cm3/: 2.0...8.0 ' z
 difference> 1000S.: -
 Shutoff
 electromagnet Volt: 24

TD-travel dif.measurement:

1st speed 1/min: 1500
 Charge press. hPa: -
 TD-travel : -1.5...1.7 #
 difference> mm: -
 Shutoff
 electromagnet>Volt: 24
 2nd speed 1/min: 1500
 Charge press. hPa: -
 TD-travel : -1.1...1.9 '
 difference> mm: -

Automatic starting fuel delivery:

1st speed 1/min: 300
 Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 55.0...75.0
 > 1000S.: -

2nd speed 1/min: 400
 Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 37.0...57.0
 > 1000S.: -

4th speed 1/min: 100
 Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 55.0...95.0

Shutoff electromagnet:

Cut-in
 >min voltage : 20.0
 Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
 K mm: -
 KF mm: 5.6...6.0
 MS mm: 0.8...1.2
 LDA stroke mm: 7.1
 Ya mm: 38.6...40.6
 Yb mm: 50.6...52.4

Remarks:

:
 :
 Yb = Distance between VE flange and
 speed-control lever in rated speed
 position

Measurement point = edge of control
lever on distributor-head end

Y_a = Distance between VE flange and
speed-control lever in idle
position

Measurement point = edge of control
lever on drive end

Z = Absolute delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : HER
Edition : 09.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1300R314C
Type number : 0 460 424 044
Customer Part-No. :

Customer-specific information
Customer : HERCULES

Engine : D2300 NA

Power KW: 55
Speed 1/min: 2600

TEST BENCH REQUIREMENTS

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 027

Opening
Pressure> bar: 250.00...253.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 840

Start of delivery
Prestroke mm: 0,3
> (from BDC): +0,04(0,06)

Indicator setting
Piston stroke> mm: 1,0
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900

C20

Setting value mm: 1,3...1,7
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4,1...4,7
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 900
Del. quantity cm3/
> 1000S.: 64,5...65,5
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 4,0
> 1000S.: (4,5)

Low-idle speed regulation

Speed 1/min: 250
Del. quantity cm3/
> 1000S.: 11,0...13.00
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 5,5
> 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1350
Del. quantity cm3/
> 1000S.: 49,50...55,50
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...110.0
mind> 1000S.: 60.00
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,6..1,4
> mm: (0,3...1,7)
electromagnet>Volt: 12
2nd speed 1/min: 900
TD travel mm: 1,30...1,70
> mm: (0,80...2,20)
Shutoff

electromagnet>Volt: 12
 3rd speed 1/min: 1300
 TD travel mm: 2,80...3,60
 > mm: (2,50...3,90)
 Shutoff
 electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump
 pressure> bar: 2,50...3,10
 Shutoff
 electromagnet>Volt: 12
 2nd speed 1/min: 900
 Supply-pump
 pressure> bar: 4,10...4,70
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 1300
 Supply-pump
 pressure> bar: 5,60...6,20
 Shutoff
 electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 500
 Shutoff
 electromagnet>Volt: 12
 Overflow : 41.70...83.40
 quantity> cm3/10s: (26.70...98.90)
 2nd speed 1/min: 1300
 Shutoff
 electromagnet>Volt: 12
 Overflow : 55.60...139.00
 quantity> cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1480
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 0,0...3,0
 > 1000S.: -
 2nd speed 1/min: 1430
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 15,0...45,0
 > 1000S.: -
 3rd speed 1/min: 1350
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 49,5...55,5
 > 1000S.: (46,50...58,5)
 5th speed 1/min: 1300
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 61,50...64,50

> 1000S.: (60,00...66,00)
 6th speed 1/min: 1100
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 63,0...66,0
 > 1000S.: (61,0...68,0)
 7th speed 1/min: 900
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 64,5...65,5
 > 1000S.: (62,0...68,0)
 8th speed 1/min: 500
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 64,5...72,5
 > 1000S.: -

Mech. shutoff:

1st speed 1/min: 1300
 Del. quantity cm3/: 0,00...3.00
 Shutoff
 electromagnet>volt: 12

Electr. shutoff:

1st speed 1/min: 250
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: (0.00...3.00)
 Shutoff
 electromagnet>volt: -

Idle delivery:

1st speed 1/min: 250
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 11,0...13,00
 > 1000S.: (9,00...15.00)
 Dispersion cm3/: 5,5
 > 1000S.: (7.0)
 2nd speed 1/min: 450
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 0,00...3,00
 > 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 250
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 40.00...80.00
 > 1000S.: -
 2nd speed 1/min: 130
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 70,0...110,0

> 1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet>Volt: 12

Del. quantity cm3/: 60.00...110,0

> 1000S.: -

Shutoff electromagnet:

Cut-in

>min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5,2...5,6

MS mm: 1,2...1,6

SVS max. mm: 2,7

Ya mm: 32,2...37,2

Yb mm: 39,5...45,1

Remarks:

: 4 030 536 09

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F
Edition : 09.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1800R689
Type number : 0 460 424 136
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.23.2585

Power KW: 76

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 027

Opening
Pressure> bar: 250.00...253.00

Perforated-plate
diameter> mm: 0,5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 1200

Setting value mm: 1,00...1,20
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1200
Charge press hPa: 1200
Setting value bar: 6,90...7,50
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 1200
Del. quantity cm3/
> 1000S.: 58.00...59.00
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 4,0
> 1000S.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 30,00...31,00
Shutoff
electromagnet>Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
> 1000S.: 5,00...9,00
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 6.0
> 1000S.: (6,5)

Full-load speed regulation

Speed 1/min: 2000
Charge press hPa: 1200
Del. quantity cm3/
> 1000S.: 40,00...46,00
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.0...110,0
mind> 1000S.: 60.0
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1200
 Charge press hPa: 1200
 TD travel mm: 1,00...1,20
 > mm: (0,40...1,80)
 electromagnet>Volt: 12,0
 2nd speed 1/min: 1500
 Charge press hPa: 1200
 TD travel mm: 2,90...3,50
 > mm: (2,50...3,90)
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 1800
 Charge press hPa: 1200
 TD travel mm: 4,50...5,30
 > mm: (4,20...5,60)
 Shutoff
 electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1200
 Supply-pump pressure> bar: 4,40...5,00
 > bar: -
 Shutoff
 electromagnet>Volt: 12
 2nd speed 1/min: 1200
 Charge press. hPa: 1200
 Supply-pump pressure> bar: 6,90...7,50
 > bar: -
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 1800
 Charge press. hPa: 1200
 Supply-pump pressure> bar: 9,0...9,6
 > bar: -
 Shutoff
 electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 600
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12
 Overflow : 111,1...155,5
 quantity> cm3/10s: (96,1...170,5)
 2nd speed 1/min: 1800
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12
 Overflow : 152,7...208,30
 quantity> cm3/10s: (137,7...223,30)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
 Charge-air pressure-setting point> hPa: 500
 LDA-stroke mm: 4,8
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 50,50...51,50
 > 1000s.: (47,50...54,50)
 2nd speed 1/min: 2200
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12,0
 Del. quantity cm3/: 0.00...4.00
 > 1000s.: -
 3rd speed 1/min: 2100
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 15,0...25,0
 > 1000s.: (13,0...27,0)
 4th speed 1/min: 2000
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 40,0...46,0
 > 1000s.: (38,5...47,5)
 5th speed 1/min: 1800
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 59,50...63,50
 > 1000s.: (58,00...65,00)
 6th speed 1/min: 1100
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 58,0...59,0
 > 1000s.: (55,0...62,0)
 7th speed 1/min: 600
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 56,5...68,5
 8th speed 1/min: 550
 Charge press. hPa: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 30,00...31,00
 > 1000s.: (27,00...34,00)

Electr. shutoff:

1st speed 1/min: 350
 Del. quantity cm3/: 0.00...3.00
 > 1000s.: (0.00...3.00)

Shutoff
electromagnet>volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 5,0...9,0
> 1000S.: (3,0...11,0)
Dispersion cm3/: 6,0
> 1000S.: (6,5)
2nd speed 1/min: 425
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 0,00...3,00
> 1000S.: -
3rd speed 1/min: 275
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 34,0...54,0
> 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 510
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 60,00...110,0
> 1000S.: -

2nd speed 1/min: 200
Shutoff
electromagnet>Volt: 12,0
Del. quantity cm3/: 75,0...105,0
> 1000S.: -

Shutoff electromagnet:

Cut-in
>min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,5...3,7
KF mm: -
MS1 mm: 1,3...1,6
LDA stroke mm: 4,8
XK mm: KSB=10,0
Ya mm: 33,0...35,0
Yb mm: 44,0...50,0

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 09.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1800R690
Type number : 0 460 424 137
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.43.2585

Power KW: 85

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 027

Opening
Pressure> bar: 250.00...253.00

Perforated-plate
diameter> mm: 0,5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1200

Setting value mm: 1,50...1,70
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1200
Setting value bar: 6,50...7,10
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1200
Del. quantity cm3/
> 1000S.: 62.50...63,50
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 4,0
> 1000S.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 33,50...34,50
Shutoff
electromagnet>Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
> 1000S.: 5,00...9,00
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 6.0
> 1000S.: (6,5)

Full-load speed regulation

Speed 1/min: 2000
Charge press hPa: 1200
Del. quantity cm3/
> 1000S.: 40,00...46,00
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.0...110,0
mind> 1000S.: 60.0
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1100
 Charge press hPa: 1200
 TD travel mm: 1,50...1,70
 > mm: (0,90...2.30)
 electromagnet>Volt: 12,0
 2nd speed 1/min: 1600
 Charge press hPa: 1200
 TD travel mm: 3.70...4.30
 > mm: (3.30...4,70)
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 1400
 Charge press hPa: 1200
 TD travel mm: 2,50...3,10
 > mm: (2,10...3,50)
 Shutoff
 electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1200
 Supply-pump
 pressure> bar: 4,90...5,50
 > bar: -
 Shutoff
 electromagnet>Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1200
 Supply-pump
 pressure> bar: 6,50...7,10
 > bar: -
 Shutoff
 electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 600
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12
 Overflow : 75.0...119.5
 quantity> cm3/10s: (60,0...134,5)
 2nd speed 1/min: 1800
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12
 Overflow : 97,2...180,5
 quantity> cm3/10s: (82,2...195.5)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
 Charge-air pressure-setting
 point> hPa: 500
 LDA-stroke mm: 7,0

Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 53,50...54,50
 > 1000S.: (50,50...57.50)
 2nd speed 1/min: 2200
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12,0
 Del. quantity cm3/: 0.00...4.00
 > 1000S.: -
 3rd speed 1/min: 2100
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 15,0...25,0
 > 1000S.: (13,0...27,0)
 4th speed 1/min: 2000
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 40,0...46,0
 > 1000S.: (38,5...47,5)
 5th speed 1/min: 1800
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 61,00...65.00
 > 1000S.: (59,50...66,50)
 6th speed 1/min: 1750
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 62,5...63,5
 > 1000S.: (59,5...66,5)
 7th speed 1/min: 600
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 62.0...66.0
 8th speed 1/min: 550
 Charge press. hPa: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 33.50...34.50
 > 1000S.: (30.50...37.50)

Electr. shutoff:

1st speed 1/min: 325
 Charge press. hPa: -
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: (0.00...3.00)
 Shutoff
 electromagnet>volt: -

Idle delivery:

1st speed 1/min: 375

Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 5,0...9,0
 > 1000S.: (3,0...11,0)
 Dispersion cm3/: 6,0
 > 1000S.: (6,5)
 2nd speed 1/min: 425
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 0,00...3,00
 > 1000S.: -
 3rd speed 1/min: 275
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 40,0...54,0
 > 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 500
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 29,00...39,0
 > 1000S.: -

2nd speed 1/min: 200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 78,0...108,0
 > 1000S.: -

Shutoff electromagnet:

Cut-in
 >min voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm: 3,5...3,7
 KF mm: -
 MS1 mm: 1,4...1,7
 LDA stroke mm: 7,0
 XK mm: KSB=5,7
 Ya mm: 33,0...35,0
 Yb mm: 44,0...50,0

Remarks:

:
 :

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F
Edition : 09.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1800R673
Type number : 0 460 424 139
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.43.3780

Power KW: 85

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 027

Opening
Pressure> bar: 250.00...253.00

Perforated-plate
diameter> mm: 0,5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1200

D01

Setting value mm: 1,50...1,70
Shutoff
electromagnet>Volt: 24

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1200
Setting value bar: 6,50...7,10
Shutoff
electromagnet>Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1200
Del. quantity cm3/
> 1000S.: 62.50...63,50
Shutoff
electromagnet>Volt: 24
Dispersion cm3/: 4,0
> 1000S.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 33,50...34,50
Shutoff
electromagnet>Volt: 24

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
> 1000S.: 5,00...9,00
Shutoff
electromagnet>Volt: 24
Del. quantity cm3/: 6.0
> 1000S.: (6,5)

Full-load speed regulation

Speed 1/min: 2000
Charge press hPa: 1200
Del. quantity cm3/
> 1000S.: 40,00...46,00
Shutoff
electromagnet>Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.0...110,0
mind> 1000S.: 60.0
Shutoff
electromagnet>Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1100
 Charge press hPa: 1200
 TD travel mm: 1,50...1,70
 > mm: (0,90...2.30)
 electromagnet>Volt: 24,0
 2nd speed 1/min: 1600
 Charge press hPa: 1200
 TD travel mm: 3.70...4.30
 > mm: (3.30...4,70)
 Shutoff
 electromagnet>Volt: 24
 3rd speed 1/min: 1400
 Charge press hPa: 1200
 TD travel mm: 2,50...3,10
 > mm: (2,10...3,50)
 Shutoff
 electromagnet>Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1200
 Supply-pump
 pressure> bar: 4,90...5,50
 > bar: -
 Shutoff
 electromagnet>Volt: 24
 2nd speed 1/min: 1100
 Charge press. hPa: 1200
 Supply-pump
 pressure> bar: 6,50...7,10
 > bar: -
 Shutoff
 electromagnet>Volt: 24
 3rd speed 1/min: 1800
 Charge press. hPa: 1200
 Supply-pump
 pressure> bar: 8,5...9,1
 Shutoff
 electromagnet>Volt: 24

Overflow quantity at overflow valve

1st speed 1/min: 600
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 24
 Overflow : 75.0...119.5
 quantity> cm3/10s: (60,0...134,5)
 2nd speed 1/min: 1800
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 24
 Overflow : 97,2...180,5
 quantity> cm3/10s: (82,2...195.5)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
 Charge-air pressure-setting
 point> hPa: 500
 LDA-stroke mm: 7,0
 Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 53,50...54,50
 > 1000S.: (50,50...57.50)
 2nd speed 1/min: 2200
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 24,0
 Del. quantity cm3/: 0.00...4.00
 > 1000S.: -
 3rd speed 1/min: 2100
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 15,0...25,0
 > 1000S.: (13,0...27,0)
 4th speed 1/min: 2000
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 24,0
 Del. quantity cm3/: 40,0...46,0
 > 1000S.: (38,5...47,5)
 5th speed 1/min: 1800
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 24,0
 Del. quantity cm3/: 61,00...65.00
 > 1000S.: (59,50...66,50)
 6th speed 1/min: 1750
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 24,0
 Del. quantity cm3/: 62,5...63,5
 > 1000S.: (59,5...66,5)
 7th speed 1/min: 600
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 24,0
 Del. quantity cm3/: 62.0...66.0
 8th speed 1/min: 550
 Charge press. hPa: -
 Shutoff
 electromagnet>Volt: 24
 Del. quantity cm3/: 33.50...34.50
 > 1000S.: (30.50...37.50)

Electr. shutoff:

1st speed 1/min: 325
 Charge press. hPa: -
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: (0.00...3.00)

Shutoff
electromagnet>volt: -

Idle delivery:

1st speed 1/min: 375

Shutoff

electromagnet>Volt: 24

Del. quantity cm3/: 5,0...9,0

> 1000S.: (3,0...11,0)

Dispersion cm3/: 6,0

> 1000S.: (6,5)

2nd speed 1/min: 425

Shutoff

electromagnet>Volt: 24

Del. quantity cm3/: 0,00...3,00

> 1000S.: -

3rd speed 1/min: 275

Shutoff

electromagnet>Volt: 24

Del. quantity cm3/: 40,0...54,0

> 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 500

Shutoff

electromagnet>Volt: 24

Del. quantity cm3/: 29,00...39,0

> 1000S.: -

2nd speed 1/min: 200

Shutoff

electromagnet>Volt: 24,0

Del. quantity cm3/: 78,0...108,0

> 1000S.: -

Shutoff electromagnet:

Cut-in

>min voltage : 20,0

Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm: 3,5...3,7

KF mm: -

MS1 mm: 1,4...1,7

LDA stroke mm: 7,0

XK mm: KSB=5,7

Ya mm: 33,0...35,0

Yb mm: 44,0...50,0

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 09.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1800R698
Type number : 0 460 424 141
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8142.43.3800

Power KW: 85

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 027

Opening
Pressure> bar: 250.00...253.00

Perforated-plate
diameter> mm: 0,5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1200

Setting value mm: 1,50...1,70

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1200
Setting value bar: 6,50...7,10

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1200
Del. quantity cm3/
> 1000S.: 62.50...63,50
Dispersion cm3/: 4,0
> 1000S.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 33,50...34,50

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
> 1000S.: 5,00...9,00
Del. quantity cm3/: 6.0
> 1000S.: (6,5)

Full-load speed regulation

Speed 1/min: 2000
Charge press hPa: 1200
Del. quantity cm3/
> 1000S.: 40,00...46,00

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.0...110,0
mind> 1000S.: 60.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1100
Charge press hPa: 1200
TD travel mm: 1,50...1,70
> mm: (0,90...2.30)
2nd speed 1/min: 1600
Charge press hPa: 1200
TD travel mm: 3.70...4.30
> mm: (3.30...4,70)
3rd speed 1/min: 1400
Charge press hPa: 1200
TD travel mm: 2,50...3,10

> mm: (2,10...3,50)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1200
Supply-pump
pressure> bar: 4,90...5,50
> bar: -
2nd speed 1/min: 1100
Charge press. hPa: 1200
Supply-pump
pressure> bar: 6,50...7,10
> bar: -
3rd speed 1/min: 1800
Charge press. hPa: 1200
Supply-pump
pressure> bar: 8,5...9,1

Overflow quantity at overflow valve

1st speed 1/min: 600
Charge press. hPa: 1200
Overflow : 75,0...119,5
quantity> cm³/10s: (60,0...134,5)
2nd speed 1/min: 1800
Charge press. hPa: 1200
Overflow : 97,2...180,5
quantity> cm³/10s: (82,2...195,5)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point> hPa: 500
LDA-stroke mm: 5,5
Del. quantity cm³/: 53,50...54,50
> 1000S.: (50,50...57,50)
2nd speed 1/min: 2200
Charge press. hPa: 1200
Del. quantity cm³/: 0,00...4,00
> 1000S.: -
3rd speed 1/min: 2100
Charge press. hPa: 1200
Del. quantity cm³/: 15,0...25,0
> 1000S.: (13,0...27,0)
4th speed 1/min: 2000
Charge press. hPa: 1200
Del. quantity cm³/: 40,0...46,0
> 1000S.: (38,5...47,5)
5th speed 1/min: 1800
Charge press. hPa: 1200
Del. quantity cm³/: 61,00...65,00
> 1000S.: (59,50...66,50)
6th speed 1/min: 1750
Charge press. hPa: 1200
Del. quantity cm³/: 62,5...63,5
> 1000S.: (59,5...66,5)
7th speed 1/min: 600

Charge press. hPa: 1200
Del. quantity cm³/: 62,0...66,0
8th speed 1/min: 550
Charge press. hPa: -
Del. quantity cm³/: 33,50...34,50
> 1000S.: (30,50...37,50)

Electr. shutoff:

1st speed 1/min: 325
Charge press. hPa: -
Del. quantity cm³/: 0,00...3,00
> 1000S.: (0,00...3,00)
Shutoff
electromagnet>volt: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 5,0...9,0
> 1000S.: (3,0...11,0)
Dispersion cm³/: 6,0
> 1000S.: (6,5)
2nd speed 1/min: 425
Del. quantity cm³/: 0,00...3,00
> 1000S.: -
3rd speed 1/min: 275
Del. quantity cm³/: 40,0...54,0
> 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 500
Del. quantity cm³/: 29,00...39,0
> 1000S.: -
2nd speed 1/min: 200
Del. quantity cm³/: 78,0...108,0
> 1000S.: -

Mounting and assembly dimensions:

Designation

K	mm: 3,5...3,7
KF	mm: -
MS1	mm: 1,4...1,7
LDA stroke	mm: 5,5
XK	mm: KSB=5,7
Ya	mm: 33,0...35,0
Yb	mm: 44,0...50,0

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 09.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1800R699
Type number : 0 460 424 142
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.23.2585

Power KW: 76

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 027

Opening
Pressure> bar: 250.00...253.00

Perforated-plate
diameter> mm: 0,5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 1200

Setting value mm: 1,00...1,20

Supply-pump pressure

Speed 1/min: 1200
Charge press hPa: 1200
Setting value bar: 6,90...7,50

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 1200
Del. quantity cm3/
> 1000S.: 58.00...59.00
Dispersion cm3/: 4,0
> 1000S.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 30,00...31,00

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
> 1000S.: 5,00...9,00
Del. quantity cm3/: 6.0
> 1000S.: (6,5)

Full-load speed regulation

Speed 1/min: 2000
Charge press hPa: 1200
Del. quantity cm3/
> 1000S.: 40,00...46,00

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.0...110,0
mind> 1000S.: 60.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1200
Charge press hPa: 1200
TD travel mm: 1,00...1,20
> mm: (0,40...1,80)
2nd speed 1/min: 1500
Charge press hPa: 1200
TD travel mm: 2,90...3,50
> mm: (2,50...3,90)
3rd speed 1/min: 1800
Charge press hPa: 1200
TD travel mm: 4,50...5,30

> mm: (4,20...5,60)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1200
Supply-pump
pressure> bar: 4,40...5,00
> bar: -
2nd speed 1/min: 1200
Charge press. hPa: 1200
Supply-pump
pressure> bar: 6,90...7,50
> bar: -
3rd speed 1/min: 1800
Charge press. hPa: 1200
Supply-pump
pressure> bar: 9,0...9,6
> bar: -

Overflow quantity at overflow valve

1st speed 1/min: 600
Charge press. hPa: 1200
Overflow : 111.1...155.5
quantity> cm3/10s: (96,1...170,5)
2nd speed 1/min: 1800
Charge press. hPa: 1200
Overflow : 152.7...208.30
quantity> cm3/10s: (137,7...223.30)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point> hPa: 500
LDA-stroke mm: 4,8
Del. quantity cm3/: 50,50...51,50
> 1000S.: (47,50...54,50)
2nd speed 1/min: 2200
Charge press. hPa: 1200
Del. quantity cm3/: 0.00...4.00
> 1000S.: -
3rd speed 1/min: 2100
Charge press. hPa: 1200
Del. quantity cm3/: 15,0...25,0
> 1000S.: (13,0...27,0)
4th speed 1/min: 2000
Charge press. hPa: 1200
Del. quantity cm3/: 40,0...46,0
> 1000S.: (38,5...47,5)
5th speed 1/min: 1800
Charge press. hPa: 1200
Del. quantity cm3/: 59,50...63,50
> 1000S.: (58,00...65,00)
6th speed 1/min: 1100
Charge press. hPa: 1200
Del. quantity cm3/: 58,0...59,0
> 1000S.: (55,0...62,0)

7th speed 1/min: 600
Charge press. hPa: 1200
Del. quantity cm3/: 56,5...68,5
8th speed 1/min: 550
Charge press. hPa: -
Del. quantity cm3/: 30,00...31,00
> 1000S.: (27,00...34,00)

Mech. shutoff:

1st speed 1/min: 1800
Charge press. hPa: 1200
Del. quantity cm3/: 0.00...3.00
> 1000S.: -

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm3/: 0.00...3.00
> 1000S.: (0.00...3.00)
Shutoff
electromagnet>volt: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm3/: 5,0...9,0
> 1000S.: (3,0...11,0)
Dispersion cm3/: 6,0
> 1000S.: (6,5)
2nd speed 1/min: 425
Del. quantity cm3/: 0,00...3,00
> 1000S.: -
3rd speed 1/min: 275
Del. quantity cm3/: 34,0...54,0
> 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 510
Del. quantity cm3/: 60.00...110,0
> 1000S.: -

2nd speed 1/min: 200
Shutoff
electromagnet>Volt: 12,0
Del. quantity cm3/: 75,0...105,0
> 1000S.: -

Mounting and assembly dimensions:

Designation
K mm: 3,5...3,7
KF mm: -
MS1 mm: 1,3...1,6
LDA stroke mm: 4,8
XK mm: KSB=10,0
Ya mm: 33,0...35,0
Yb mm: 44,0...50,0

Remarks:

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BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 09.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1800R713
Type number : 0 460 424 145
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.43.2610

Power KW: 85

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 027

Opening
Pressure> bar: 250.00...253.00

Perforated-plate
diameter> mm: 0,5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 450

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1200

Setting value mm: 1,50...1,70
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1200
Setting value bar: 6,50...7,10
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1200
Del. quantity cm3/
> 1000S.: 62.50...63,50
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 4,0
> 1000S.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 33,50...34,50
Shutoff
electromagnet>Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
> 1000S.: 5,00...9,00
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 6.0
> 1000S.: (6,5)

Full-load speed regulation

Speed 1/min: 2000
Charge press hPa: 1200
Del. quantity cm3/
> 1000S.: 40,00...46,00
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.0...110,0
mind> 1000S.: 60.0
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1100
 Charge press hPa: 1200
 TD travel mm: 1,50...1,70
 > mm: (0,90...2,30)
 electromagnet>Volt: 12,0
 2nd speed 1/min: 1600
 Charge press hPa: 1200
 TD travel mm: 3,70...4,30
 > mm: (3,30...4,70)
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 1400
 Charge press hPa: 1200
 TD travel mm: 2,50...3,10
 > mm: (2,10...3,50)
 Shutoff
 electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1200
 Supply-pump
 pressure> bar: 4,90...5,50
 > bar: -
 Shutoff
 electromagnet>Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1200
 Supply-pump
 pressure> bar: 6,50...7,10
 > bar: -
 Shutoff
 electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 600
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12
 Overflow : 75,0...119,5
 quantity> cm3/10s: (60,0...134,5)
 2nd speed 1/min: 1800
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12
 Overflow : 97,2...180,5
 quantity> cm3/10s: (82,2...195,5)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
 Charge-air pressure-setting
 point> hPa: 500
 LDA-stroke mm: 5,5

Shutoff

electromagnet>Volt: 12
 Del. quantity cm3/: 53,50...54,50
 > 1000s.: (50,50...57,50)
 2nd speed 1/min: 2200
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12,0
 Del. quantity cm3/: 0,00...4,00
 > 1000s.: -
 3rd speed 1/min: 2100
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 15,0...25,0
 > 1000s.: (13,0...27,0)
 4th speed 1/min: 2000
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 40,0...46,0
 > 1000s.: (38,5...47,5)
 5th speed 1/min: 1800
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 61,00...65,00
 > 1000s.: (59,50...66,50)
 6th speed 1/min: 1750
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 62,5...63,5
 > 1000s.: (59,5...66,5)
 7th speed 1/min: 600
 Charge press. hPa: 1200
 Shutoff
 electromagnet>Volt: 12,0
 Del. quantity cm3/: 62,0...66,0
 8th speed 1/min: 550
 Charge press. hPa: -
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 33,50...34,50
 > 1000s.: (30,50...37,50)

Electr. shutoff:

1st speed 1/min: 325
 Charge press. hPa: -
 Del. quantity cm3/: 0,00...3,00
 > 1000s.: (0,00...3,00)
 Shutoff
 electromagnet>volt: -

Idle delivery:

1st speed 1/min: 375

Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 5,0...9,0
> 1000S.: (3,0...11,0)
Dispersion cm3/: 6,0
> 1000S.: (6,5)
2nd speed 1/min: 425

Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 0,00...3,00
> 1000S.: -
3rd speed 1/min: 275

Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 40,0...54,0
> 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 500
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 29,00...39,0
> 1000S.: -

2nd speed 1/min: 200
Shutoff
electromagnet>Volt: 12,0
Del. quantity cm3/: 78,0...108,0
> 1000S.: -

Shutoff electromagnet:

Cut-in
>min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: 3,5...3,7
KF mm: -
MS1 mm: 1,4...1,7
LDA stroke mm: 5,5
XK mm: KSB=5,7
Ya mm: 33,0...35,0
Yb mm: 44,0...50,0

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS
Edition : 14.08.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R102
Type number : 0 460 426 025
Customer Part-No. : 3 228 639

Customer-specific information
Customer : CASE

Engine : DT 402
Speed 1/min: 103

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 020

Opening
Pressure> bar: 169.00...175.00

Perforated-plate
diameter> mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 840

Start of delivery
Prestroke mm: 0,2
> (from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1.0
> mm: $\pm 0,02(0,06)$
Outlet > : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 600
Charge press. hPa: 1000
Setting value mm: 3.4...3.6

Supply-pump pressure

Speed 1/min: 600
Charge press hPa: 1000
Setting value bar: 5.0...5.6

Full-load del. with charge press.:

Speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/
> 1000S.: 99.0...100.0
Dispersion cm³/: 3.5
> 1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
> 1000S.: 81.5...82.5

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
> 1000S.: 20.0...26.0
Del. quantity cm³/: 5.0
> 1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1200
Charge press hPa: 1000
Del. quantity cm³/
> 1000S.: 33.0...36.0

Start:

Speed 1/min: 100
Del. quantity cm³/: 85.0...145.0
mind> 1000S.: 85.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press hPa: 1000
TD travel mm: 1,3...2,1
> mm: (1.0...2.4)
2nd speed 1/min: 600
Charge press hPa: 1000
TD travel mm: 3.2...3.6
> mm: (2.7...4.1)

3rd speed 1/min: 700
Charge press hPa: 1000
TD travel mm: 3.6...4.4
> mm: (3.3...4.7)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Charge press. hPa: 1000
Supply-pump
pressure> bar: 3.9...4.5
2nd speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure> bar: 5.0...5.6
3rd speed 1/min: 1080
Charge press. hPa: 1000
Supply-pump
pressure> bar: 6.9...7.5

Overflow quantity at overflow valve

1st speed 1/min: 600
Charge press. hPa: -
Overflow : 41.70...83.40
quantity> cm3/10s: (26.70...98.40)
2nd speed 1/min: 1080
Charge press. hPa: 1000
Overflow : 55.60...139.00
quantity> cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600
Charge-air pressure-setting
point> hPa: 200
LDA-stroke mm: 4.0
Del. quantity cm3/: 89.0...90.0
> 1000S.: (86.5...91.5)
2nd speed 1/min: 1280
Charge press. hPa: 1000
Del. quantity cm3/: 0.0...3.0
> 1000S.: -
3rd speed 1/min: 1220
Charge press. hPa: 1000
Del. quantity cm3/: 5.0...35.0
> 1000S.: -
4th speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/: 33.0...39.0
> 1000S.: (28.0...44.0)
5th speed 1/min: 1080
Charge press. hPa: 1000
Del. quantity cm3/: 94.5...97.5
> 1000S.: (92.5...99.5)
6th speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm3/: 99.0...100.0
> 1000S.: (96.5...101.5)

7th speed 1/min: 600
Charge press. hPa: -
Del. quantity cm3/: 81.5...82.5
> 1000S.: (79.0...85.0)

Mech. shutoff:

1st speed 1/min: 1080
Charge press. hPa: 1000
Del. quantity cm3/: 0.0...3.0
> 1000S.: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm3/: 20.0...26.0
> 1000S.: (18.0...28.0)
Dispersion cm3/: 5.0
> 1000S.: (5.0)
2nd speed 1/min: 410
Del. quantity cm3/: 0.5...10.5
> 1000S.: -
3rd speed 1/min: 500
Del. quantity cm3/: 0.0...3.0
> 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm3/: 95.0...155.0
> 1000S.: VH → VL

2nd speed 1/min: 440
Del. quantity cm3/: 35.0...85.0
> 1000S.: VH → VL

4th speed 1/min: 100
Del. quantity cm3/: 85.0...145.0
> 1000S.: VH → VL

Shutoff electromagnet:

Cut-in
>min voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.3...5.7
MS mm: 1.4...18
LDA stroke mm: 4.0
Ya mm: 37.2...39.2
Yb mm: 49.2...57,4

Remarks:

:
:

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 30.07.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F2400R677
Type number : 0 460 484 108
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1.6L

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 000

Opening
Pressure> bar: 144.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 840

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 3.40...3.80
AFB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 6.30...6.90
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del. quantity cm3/
> 1000S.: 31.5...32.5
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.5
> 1000S.: (2.5)

11

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
> 1000S.: 13.0...17.0
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 2.5
> 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2550
Del. quantity cm3/
> 1000S.: 17.0...23.0
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 31.50...61.50
mind> 1000S.: 31.50
KSB/AFB
Valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 1.0...2.6

> mm: (0.8...2.8)
 KSB/AFB
 valve > Volt: -
 electromagnet>Volt: 12
 2nd speed 1/min: 1000
 TD travel mm: 1.20...2.40
 > mm: (1.10...2.50)

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 1500
 TD travel mm: 3.10...4.10
 > mm: (3.00...4.20)

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 4th speed 1/min: 2400
 TD travel mm: 6.00...7.20
 > mm: (5.90...7.30)

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Supply-pump
 pressure> bar: 3.40...4.40

KSB/AFB
 valve > Volt: 12
 Shutoff

electromagnet>Volt: 12
 2nd speed 1/min: 1500
 Supply-pump
 pressure> bar: 6.10...7.10

KSB/AFB
 valve > Volt: 12
 Shutoff

electromagnet>Volt: 12
 3rd speed 1/min: 2400
 Supply-pump
 pressure> bar: 8.80...9.80

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 600
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Overflow : 44.40...88.80
 quantity> cm3/10s: (29.40...103.8)
 2nd speed 1/min: 2400

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Overflow : 55.60...139.00
 quantity> cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2800
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: (0.00...3.00)

3rd speed 1/min: 2650
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 4.00...12.00
 > 1000S.: (3.00...13.00)

5th speed 1/min: 2550
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 17.00...23.00
 > 1000S.: (16.00...24.00)

6th speed 1/min: 2400
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 28.0...30.0
 > 1000S.: (27.0...31.0)

7th speed 1/min: 1500
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 31.5...32.5
 > 1000S.: (30.0...34.0)

8th speed 1/min: 600
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 23.5...27.5
 > 1000S.: (22.5...28.5)

Electr. shutoff:

1st speed 1/min: 475
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: (0.00...3.00)

Shutoff
electromagnet>volt: -
KSB/AFB
valve > Volt: 12

Damper set qty.:

Automatic starting fuel delivery:

1st speed 1/min: 350
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 32.00...42.00
> 1000s.: (32.00...42.00)

2nd speed 1/min: 500
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 19.50...29.50
> 1000s.: (19.50...29.50)

Shutoff electromagnet:

Cut-in
>min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 1.6...2.0
Ya	mm: 39.4...41.4
Yb	mm: 45.3...58.2

Remarks:

:
:

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 5,0 K
Edition : 23.07.91
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE4/11F1500R275-2
Type number : 0 460 414 092

Customer-specific information
Customer : PERKINS

Engine : 500.DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 022

Opening
Pressure> bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall>thickness : 2
x Length> mm: 450

Start of delivery
Prestroke mm: 0.50
> (from BDC): ±0,02(0,04)

Start of delivery block
Piston stroke mm: 1.42
> mm: ±0,02(0,06)
Outlet > : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Setting value mm: 2,1...2,5
AFB/AFB
valve > Volt: 12
Shutoff

electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Setting value bar: 5.30...5.90
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
> 1000s.: 20.50...21.50 11
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 3,5
> 1000s.: -

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
> 1000s.: 10.00...14.00
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 3.0
> 1000s.: -

Full-load speed regulation

Speed 1/min: 1575
Del. quantity cm3/
> 1000s.: 11.00...21.00
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: -
mind> 1000s.: 60.0
KSB/AFB
Valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 700
 TD travel mm: 1.40...3.80
 > mm: -
 KSB/AFB
 valve > Volt: -
 electromagnet>Volt: 12
 2nd speed 1/min: 800
 TD travel mm: 0.40...1.20
 > mm: (0.10...1.50)
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 1100
 TD travel mm: 2.10...2.50
 > mm: (1.60...3.00)
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 4th speed 1/min: 1350
 TD travel mm: 3.40...4.20
 > mm: (3.10...4.50)
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 5th speed 1/min: 1450
 TD travel mm: 3.70...4.50
 > mm: (3.40...4.80)
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
 Supply-pump
 pressure> bar: 4.10...4.70
 > bar: -
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 2nd speed 1/min: 1100
 Supply-pump
 pressure> bar: 5.30...5.90
 > bar: -
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 1450
 Supply-pump
 pressure> bar: 6.50...7.10
 > bar: -
 KSB/AFB
 valve > Volt: 12
 Shutoff

electromagnet>Volt: 12
 Overflow quantity at overflow valve
 1st speed 1/min: 600
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Overflow : 41.70...83.40
 quantity> cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1450
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Overflow : 55.60...139.00
 quantity> cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1650
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm³/: 0.00...3.00
 > 1000s.: -
 2nd speed 1/min: 1600
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...17.00
 > 1000s.: -
 3rd speed 1/min: 1575
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm³/: 11.00...21.00
 > 1000s.: (10.00...22.00)
 4th speed 1/min: 1450
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm³/: 31.00...34.00
 > 1000s.: (29.50...35.50)
 5th speed 1/min: 1200
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm³/: 31.00...34.00
 > 1000s.: (29.50...35.50)
 6th speed 1/min: 1100
 KSB/AFB
 valve > Volt: 12

Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 30.50...32.50
 > 1000S.: (28.50...34.50)
 7th speed 1/min: 800
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 25.50...28.50
 > 1000S.: (24.00...30.00)
 8th speed 1/min: 600
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 20.50...21.50
 > 1000S.: (18.50...23.50)

Electr. shutoff:

1st speed 1/min: 300
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: -
 Shutoff
 electromagnet>volt: -
 KSB/AFB
 valve > Volt: 12

Idle delivery:

1st speed 1/min: 300
 >KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 10.00...14.00
 > 1000S.: (8.00...16.00)
 2nd speed 1/min: 430
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 0.00...3..00
 > 1000S.: -
 3rd speed 1/min: 350
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 1.50....7.50
 > 1000S.: (0.50...8.50)

Automatic starting fuel delivery:

1st speed 1/min: 250
 KSB/AFB
 valve > Volt: 12

D20

Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 31.00...47.00
 > 1000S.: -
 2nd speed 1/min: 400
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 6.00...22.00
 > 1000S.: -

Shutoff electromagnet:

Cut-in
 >min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: 1.1...1.5
SVS max.	mm: 4.1
XK	mm: 17.0...19.0
XL	mm: 12.9...16.3

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 19.03.96
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE4/11F2000R663
Type number : 0 460 414 132

Customer-specific information
Customer : OTOSAN

Engine : 2.5.DI

Power KW: 74

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 114

Opening
Pressure> bar: 204.00...210.00

Perforated-plate
diameter> mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall>thickness : 2
x Length> mm: 450

Start of delivery block
Piston stroke mm: 0.62
> mm: ±0.05
Outlet > : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 1000
Setting value mm: 2.9...3.5

D21

Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 1000
Setting value bar: 6.70...7.30
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm3/
> 1000s.: 41.8...42.2
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
> 1000s.: 28.5...29.5
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 3.0
> 1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
> 1000s.: 6.7...8.7
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 3.0
> 1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2200
Charge press hPa: 1000
Del. quantity cm3/
> 1000s.: 16.80...18.80
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.0...100.00
mind> 1000s.: 60.0
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.3...2.1
> mm: (0.8...2.6)
electromagnet>Volt: 12
2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.7...3.3
> mm: (2.4...3.6)
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 4.90...5.70
> mm: (4.40...6.20)
Shutoff
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure> bar: 6.20...6.80
Shutoff
electromagnet>Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure> bar: 6.70...7.30
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 1000
Supply-pump
pressure> bar: 8.20...8.80
Shutoff
electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 800
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12
Overflow : 88.80...133.30
quantity> cm³/10s: (73.80...148.40)
2nd speed 1/min: 1950
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12
Overflow : 111.1...194.40
quantity> cm³/10s: (96.10...209.40)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000

Charge-air pressure-setting

point> hPa: 450
LDA-stroke mm: 5.3
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 34.5...35.5
> 1000S.: -
2nd speed 1/min: 2350
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
> 1000S.: -
3rd speed 1/min: 2200
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 16.8...18.8
> 1000S.: (12.80...22.80)
4th speed 1/min: 2150
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 21.50...27.50
> 1000S.: (18.50...30.50)
5th speed 1/min: 1950
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 40.50...42.90
> 1000S.: (39.20...44.20)
6th speed 1/min: 1000
Charge press. hPa: -
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 28.50...29.50
> 1000S.: (26.50...31.50)
7th speed 1/min: 800
Charge press. hPa: 1000
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 41.80...42.20
> 1000S.: (39.00...45.00)

Electr. shutoff:

1st speed 1/min: 500
Del. quantity cm³/: 0.00...3.00
> 1000S.: -
Shutoff
electromagnet>volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 5.70...8.70

> 1000s.: (3.70...11.70)

Automatic starting fuel delivery:

1st speed 1/min: 480

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 20.00...40.00

> 1000s.: -

2nd speed 1/min: 300

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: 48.0...78.0

> 1000s.: -

Shutoff electromagnet:

Cut-in

>min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 2.7...2.9

KF mm: -

MS1 mm: 1.7...2.0

FH mm: KSB 10.0

TLA-E mm: 2.5

Ya mm: 42.8...45.8

Yb mm: 59.5...71.5

Remarks:

: FB - KDEP 1151

Ya = Distance between VE flange and
speed-control lever in idle
position

Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position

Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 18.03.96
replaces : 17.05.89
Calibrating oil : ISO 4113

Injection pump : VE4/12F1250R301
Type number : 0 460 424 041
Customer Part-No. : 3 911 240

Customer-specific information
Customer : CDC

Engine : 4BTA 390 A

Power KW: 88
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 027

Opening
Pressure> bar: 250.00...253.00

Perforated-plate
diameter> mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall>thickness : 2
x Length> mm: 840

Start of delivery
Prestroke mm: 0.3
> (from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1.25
> mm: +0.02(0.04)

Outlet > : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1100
Setting value mm: 0.80...1.20
AFB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1100
Setting value bar: 4.50...5.10
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1100
Del. quantity cm3/
> 1000S.: 84.5...85.5
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 4.0
> 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
> 1000S.: 56.50...57.50
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

11

Low-idle speed regulation

Speed 1/min: 375
Charge press hPa: -
Del. quantity cm3/
> 1000S.: 9.00...13.0
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 5.5
> 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1340

Charge press hPa: 1100
Del. quantity cm³/
> 1000S.: 62.0...68.0
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm³/
mind> 1000S.: 70.00
KSB/AFB
Valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press hPa: -
TD travel mm: 2.50...3.50
> mm: -
KSB/AFB
valve > Volt: -
electromagnet>Volt: 12
2nd speed 1/min: 1000
Charge press hPa: 1100
TD travel mm: 0.2...1.0
> mm: (0.0...1.3)
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1100
Charge press hPa: 1100
TD travel mm: 0.80...1.20
> mm: (0.30...1.70)
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
4th speed 1/min: 1250
Charge press hPa: 1100
TD travel mm: 1.4...2.2
> mm: (1.1...2.5)
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 550
Charge press. hPa: 1100

Supply-pump
pressure> bar: 2.90...3.50
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1100
Supply-pump
pressure> bar: 4.50...5.10
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1100
Supply-pump
pressure> bar: 5.50...6.10
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
4th speed 1/min: 1250
Charge press. hPa: 1100
Supply-pump
pressure> bar: 6.1...6.7
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 500
Charge press. hPa: -
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Overflow : 41...83
quantity> cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1100
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Overflow : 55...138
quantity> cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point> hPa: 600
LDA-stroke mm: 6.5
KSB/AFB
valve > Volt: 12
Shutoff

electromagnet>Volt: 12
 Del. quantity cm3/: 73.5...74.5
 > 1000S.: (70.0...78.0)
 2nd speed 1/min: 1550
 Charge press. hPa: 1100
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.0...3.0
 > 1000S.: -
 3rd speed 1/min: 1480
 Charge press. hPa: 1100
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 0.0...15.0
 > 1000S.: -
 4th speed 1/min: 1430
 Charge press. hPa: 1100
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 15.0...55.0
 > 1000S.: -
 5th speed 1/min: 1340
 Charge press. hPa: 1100
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 62.0...68.0
 > 1000S.: (59.0...71.0)
 6th speed 1/min: 1250
 Charge press. hPa: 1100
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 79.0...82.0
 > 1000S.: (77.5...83.5)
 7th speed 1/min: 1100
 Charge press. hPa: 1100
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 81.5...84.5
 > 1000S.: (79.5...86.5)
 8th speed 1/min: 850
 Charge press. hPa: 1100
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 84.5...85.5
 > 1000S.: (82.0...88.0)
 9th speed 1/min: 550

Charge press. hPa: 1100
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 97.0...105.0
 > 1000S.: -
 10th speed 1/min: 550
 Charge press. hPa: -
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 56.5...57.5
 > 1000S.: (53.0...61.0)

Mech. shutoff:

1st speed 1/min: 1250
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: -
 Shutoff
 electromagnet>volt: 12
 KSB/AFB
 valve > Volt: 12

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm3/: 0.00...3.00
 > 1000S.: -
 Shutoff
 electromagnet>volt: -
 KSB/AFB
 valve > Volt: 12

Idle delivery:

1st speed 1/min: 375
 >KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 9.0...13.0
 > 1000S.: (6.0...16.0)
 2nd speed 1/min: 450
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm3/: 0.0...4.0
 > 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 240
 KSB/AFB
 valve > Volt: 12
 Shutoff

electromagnet>Volt: 12
Del. quantity cm³/: 80.0....
> 1000s.: -

2nd speed 1/min: 360

KSB/AFB

valve > Volt: 12

Shutoff

electromagnet>Volt: 12

Del. quantity cm³/: ...80.0

> 1000s.: -

Shutoff electromagnet:

Cut-in

>min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.2...5.4

MS1 mm: 1.2...1.5

SVS max. mm: 3.5

LDA stroke mm: 6.5

XK mm: 18.8...20.8

XL mm: 11.8...15.2

Remarks:

Ya = Distance between VE flange and
speed-control lever in idle
position

Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position

Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : HEP 3,7 A2
Edition : 24.07.91
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE4/12F1300R314
Type number : 0 460 424 044
Customer Part-No. : 403 053 607

Customer-specific information
Customer : HERCULES

Engine : DT -3.7L IND.

Power KW: 58
Speed 1/min: 2600

TEST BENCH REQUIREMENTS

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 027

Opening
Pressure> bar: 250.00...253.00

Perforated-plate
diameter> mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall>thickness : 2
x Length> mm: 840

Start of delivery
Prestroke mm: 0.3
> (from BDC): ±0,02(0,04)

Indicator setting
Piston stroke> mm: 1.0
Outlet> : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 1.60...2.00
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.10...4.70
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 900
Del. quantity cm3/
> 1000s.: 70.50...71.50
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 4.0
> 1000s.: (4.5)

Low-idle speed regulation

Speed 1/min: 250
Del. quantity cm3/
> 1000s.: 2.00...4.00
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 5.5
> 1000s.: (7.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: -
mind> 1000s.: 50.00
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 0.60...1.40
> mm: (0.30...1.70)
electromagnet>Volt: 12
2nd speed 1/min: 900
TD travel mm: 1.60...2.00
> mm: (1.10...2.50)
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.70...3.50
> mm: (2.40...3.80)
Shutoff
electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure> bar: 2.50...3.10
Shutoff
electromagnet>Volt: 12
2nd speed 1/min: 900
Supply-pump
pressure> bar: 4.10...4.70
Shutoff
electromagnet>Volt: 12
3rd speed 1/min: 1250
Supply-pump
pressure> bar: 5.50...6.10
Shutoff
electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 500
Shutoff
electromagnet>Volt: 12
Overflow : 41...83
quantity> cm3/10s: (26...98)
2nd speed 1/min: 1300
Shutoff
electromagnet>Volt: 12
Overflow : 55...138
quantity> cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1460
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 0.00...3.00
> 1000S.: -
2nd speed 1/min: 1400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...55.00
> 1000S.: -
3rd speed 1/min: 1440
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 0.00...15.0
> 1000S.: -
4th speed 1/min: 1345
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 54.00...60.00
> 1000S.: (51.00...63.00)
5th speed 1/min: 1300
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 66.00...69.00
> 1000S.: (64.50...70.50)

6th speed 1/min: 1100
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 70.00...72.00
> 1000S.: (67.50...74.50)
7th speed 1/min: 900
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 70.50...71.50
> 1000S.: (68.00...74.00)

Mech. shutoff:

1st speed 1/min: 1400
Del. quantity cm3/: 0.00...3.00
> 1000S.: -
Shutoff
electromagnet>volt: 12

Electr. shutoff:

1st speed 1/min: 250
Del. quantity cm3/: 0.00...3.00
> 1000S.: -
Shutoff
electromagnet>volt: -

Damper set qty.:

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 50.00...110.00
> 1000S.: -

2nd speed 1/min: 250
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 30.00...90.00
> 1000S.: -

Shutoff electromagnet:

Cut-in
>min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.0...1.4
SVS max. mm: 2.7
XK mm: 18.8...20.8
XL mm: 11.8...15.2

Remarks:



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 15.03.96
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/8F2400R677
Type number : 0 460 484 108
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1.6 L

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return>temp. > °C
with>thermometer> : 40.00...48.00
Electronically> : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly> : 1 688 901 000

Opening
Pressure> bar: 144.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall>thickness : 2.00
x Length> mm: 840

Start of delivery
Prestroke mm: -
> (from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 3.40...3.80
AFB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 6.30...6.90
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del. quantity cm3/
> 1000S.: 31.5...32.5
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Dispersion cm3/: 2.5
> 1000S.: (3.0)

11

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
> 1000S.: 13.0...17.0
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm3/: 2.5
> 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2550
Del. quantity cm3/
> 1000S.: 16.0...22.0
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 31.5...61.5
mind> 1000S.: 31.5
KSB/AFB
Valve > Volt: 12
Shutoff
electromagnet>Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 1.20...2.40

> mm: (0.80...2.80)
 KSB/AFB
 valve > Volt: -
 electromagnet>Volt: 12
 2nd speed 1/min: 1000
 TD travel mm: 1.40...2.20
 > mm: (1.10...2.50)

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 1500
 TD travel mm: 3.40...3.80
 > mm: (3.00...4.20)

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 4th speed 1/min: 2400
 TD travel mm: 6.2...7.0
 > mm: (5.9...7.3)

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Supply-pump
 pressure> bar: 3.60...4.20

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 2nd speed 1/min: 1500
 Supply-pump
 pressure> bar: 6.30...6.90

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 3rd speed 1/min: 2400
 Supply-pump
 pressure> bar: 9.00...9.60

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12

Overflow quantity at overflow valve

1st speed 1/min: 600
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Overflow : 44.40...88.80
 quantity> cm³/10s: (29.40...103.80)
 2nd speed 1/min: 2400

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Overflow : 55.60...139.00
 quantity> cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800
 KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm³/: 0.00...3.00
 > 1000s.: (0.00...3.00)
 2nd speed 1/min: 2650

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 4.0...12.0
 > 1000s.: (3.0...13.0)
 3rd speed 1/min: 2550

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm³/: 17.0...23.0
 > 1000s.: (16.0...24.0)
 4th speed 1/min: 2400

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm³/: 28.0...30.0
 > 1000s.: (27.0...31.0)
 5th speed 1/min: 1500

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm³/: 31.50...32.50
 > 1000s.: (30.0...34.0)
 6th speed 1/min: 600

KSB/AFB
 valve > Volt: 12
 Shutoff
 electromagnet>Volt: 12
 Del. quantity cm³/: 24.0...27.0
 > 1000s.: (22.5...28.5)

Electr. shutoff:

1st speed 1/min: 475
 Del. quantity cm³/: 0.00...3.00
 > 1000s.: (0.00...3.00)

Shutoff
electromagnet>volt: -
KSB/AFB
valve > Volt: 12

Idle delivery:

1st speed 1/min: 400
>KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 13.0...17.0
> 1000S.: (9.5...20.5)
Dispersion cm³/: 2.5
> 1000S.: (3.5)
2nd speed 1/min: 300
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 24.0...30.0
> 1000S.: (21.5...32.5)
3rd speed 1/min: 1000
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 0.0...3.0
> 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 32.0...42.0
> 1000S.: -

2nd speed 1/min: 500
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 19.5...29.5
> 1000S.: -

4th speed 1/min: 100
KSB/AFB
valve > Volt: 12
Shutoff
electromagnet>Volt: 12
Del. quantity cm³/: 32.50...62.50
> 1000S.: -

Shutoff electromagnet:

Cut-in

E05

>min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 1.6...2.0
Ya	mm: 39.4...41.4
Yb	mm: 45.8...58.7

Remarks:

:
:

Ya = Distance between VE flange and
speed-control lever in idle
position

Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position

Measurement point = edge of control
lever on distributor-head end

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 01.04.95
Test oil : ISO 4113

Part no. : 0 460 413 001
Pump designation : VE3/11F1250L163

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8035.05.200
Power KW : 42.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 020

Opening pressure
bar : 172
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Prestroke

E06

(as of UT) mm : 0,2
Tolerance mm : $\pm 0,02$
Check
tolerance mm : $\pm 0,04$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 800

Setting mm : 2.7
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 800

Setting hPa : 4.1
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 69.0
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 3.5
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 3.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1400
Del. quantity
cm³/1000 strokes : 20.0
Tolerance
cm³/1000 strokes : 2.0

Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 105.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1200
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
SV travel mm : 1.2
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1200
Supply pump
pressure bar : 5.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Supply pump
pressure bar : 2.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1250
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1400
Del. quantity
cm³/1000 strokes : 20.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1350
Del. quantity
cm³/1000 strokes : 50.0
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000s. : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1460
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 70.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 500

Del. quantity
cm³/1000 strokes : 60.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 69.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 475
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 250
Del. quantity
cm³/1000 strokes : 45.0
Tolerance
cm³/1000 strokes : 20.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 150
Del. quantity
cm³/1000 strokes : 115.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : -
Dimension KF mm : 5,2
Tolerance mm : +0,2
Dimension MS mm : 1,6
Tolerance mm : +0,2

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 37,9..39,9

Control lever
position YB mm : 44,5..49,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 01.04.95
Test oil : ISO 4113

Part no. : 0 460 413 002
Pump designation : VE3/11F1250L163-1

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8035.06.200
Power KW : 38.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 020

Opening pressure
bar : 172
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Prestroke

E09

(as of UT) mm : 0,2
Tolerance mm : $\pm 0,02$
Check
tolerance mm : $\pm 0,04$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1000
Setting mm : 3.0
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1000
Setting hPa : 6.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 65.5
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 3.5
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 17.5
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 3.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1350
Del. quantity
cm³/1000 strokes : 45.0

Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 105.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1250
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 800

SV travel mm : 1.5
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1250
Supply pump
pressure bar : 7.1
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Supply pump
pressure bar : 3.7
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1250
Overflow quantity
ccm/10s : 97.2

Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1350
Del. quantity
cm³/1000 strokes : 45.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1400
Del. quantity
cm³/1000 strokes : 10.0
Check tolerance
cm³/1000s. : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1450
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 500

Del. quantity
cm³/1000 strokes : 58.0
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 65.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 475
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 250
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 150
Del. quantity
cm³/1000 strokes : 115.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : -
Dimension KF mm : 5,2
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,6
Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 37,9..39,9
Control lever
position YB mm : 44,0..49,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 16.10.95
Test oil : ISO 4113

Part no. : 0 460 413 004
Pump designation : VE3/11F1250L163-2

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8035.06.220
Power KW : 33.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holder
assembly : 1 688 901 020

Opening pressure
bar : 172
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Prestroke

E12

(as of UT) mm : 0,2
Tolerance mm : +0,02
Check
tolerance mm : +0,04

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 800

Setting mm : 3.0
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 800

Setting hPa : 5.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 800
Del. quantity
cm3/1000 strokes : 59.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 3.5
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 375
Del. quantity
cm3/1000 strokes : 12.5
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000s. : 3.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1400
Del. quantity
cm3/1000 strokes : 15.0

Tolerance
cm³/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 105.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1000
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1250
Supply pump
pressure bar : 7.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Supply pump
pressure bar : 3.5
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1250
Overflow quantity
ccm/10s : 97.2

Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1400
Del. quantity
cm³/1000 strokes : 15.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1350
Del. quantity
cm³/1000 strokes : 45.0
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000s. : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1450
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 52.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
 Del. quantity
 cm³/1000 strokes : 55.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 3.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 Del. quantity
 cm³/1000 strokes : 59.5
 Tolerance
 cm³/1000 strokes : 0.5
 Check tolerance
 cm³/1000S. : 3.5
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 375
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5
 Spread
 cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 375
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Spread
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 1.5
 Spread
 cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 500
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5

Shutoff solenoid
 Volt : 12

Rated speed rpm : 425
 Del. quantity
 cm³/1000 strokes : 5.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

START TRANSITION

Rated speed rpm : 250
 Del. quantity
 cm³/1000 strokes : 35.0
 Tolerance
 cm³/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 150
 Del. quantity
 cm³/1000 strokes : 105.0
 Tolerance
 cm³/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : -
 Dimension KF mm : 5,5
 Tolerance mm : $\pm 0,2$
 Dimension MS mm : 1,6
 Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION
 SET

Control lever
 position YA mm : 37,9..39,9

Control lever
 position YB mm : 46,0..51,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 21.03.95
Test oil : ISO 4113

Part no. : 0 460 413 005
Pump designation : VE3/11F1200L163-3

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8035.05.265
Power KW : 35.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 020

Opening pressure
bar : 172
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Prestroke

E16

(as of UT) mm : 0,2
Tolerance mm : +-0,02
Check
tolerance mm : +-0,04

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 800
Setting mm : 3.4
Tolerance mm : 0.2
Shutoff solenoid
Volt : 24

SUPPLY PUMP PRESSURE

Rated speed rpm : 800
Setting hPa : 4.5
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 800
Del. quantity
cm3/1000 strokes : 63.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 3.5
Shutoff solenoid
Volt : 24

IDLE SETTING

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 15.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 24
Spread
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000S. : 3.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1350
Del. quantity
cm3/1000 strokes : 18.0

Tolerance
 cm³/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 24

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm³/1000 strokes : 115.0
 Tolerance
 cm³/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 24

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1200
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
 SV travel mm : 1.0
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 24

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1200
 Supply pump
 pressure bar : 6.3
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
 Supply pump
 pressure bar : 3.2
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

OVERFLOW QUANTITY

Rated speed rpm : 1250
 Overflow quantity
 ccm/10s : 97.2

Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 24

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1350
 Del. quantity
 cm³/1000 strokes : 18.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000s. : 6.0
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 1300
 Del. quantity
 cm³/1000 strokes : 41.0
 Tolerance
 cm³/1000 strokes : 8.0
 Check tolerance
 cm³/1000s. : 10.0
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 1400
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000s. : 1.5
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 1250
 Del. quantity
 cm³/1000 strokes : 57.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000s. : 3.5
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 61.0
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 63.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 24

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 420
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

Shutoff solenoid
Volt : 24

START TRANSITION

Rated speed rpm : 250
Del. quantity
cm³/1000 strokes : 45.0
Tolerance
cm³/1000 strokes : 20.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 150
Del. quantity
cm³/1000 strokes : 125.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 24

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : -
Dimension KF mm : 5,5
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,6
Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 37,9..39,9

Control lever
position YB mm : 44,5..49,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 01.04.95
Test oil : ISO 4113

Part no. : 0 460 414 013
Pump designation : VE4/11F1250L164

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8045.05.200
Power KW : 58.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 020

Opening pressure
bar : 172
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Prestroke

E19

(as of UT) mm : 0,2
Tolerance mm : $\pm 0,02$
Check
tolerance mm : $\pm 0,04$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 800

Setting mm : 3.2
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 800

Setting hPa : 5.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 69.0
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 3.5
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000s. : 3.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1350
Del. quantity
cm³/1000 strokes : 44.0

Tolerance
 cm³/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm³/1000 strokes : 115.0
 Tolerance
 cm³/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1250
 SV travel mm : 7.2
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 SV travel mm : 0.8
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1250
 Supply pump
 pressure bar : 7.3
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Supply pump
 pressure bar : 3.9
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1250

Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1350
 Del. quantity
 cm³/1000 strokes : 44.0
 Tolerance
 cm³/1000 strokes : 2.0
 Check tolerance
 cm³/1000s. : 6.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1400
 Del. quantity
 cm³/1000 strokes : 12.0
 Check tolerance
 cm³/1000s. : 8.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1450
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000s. : 1.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
 Del. quantity
 cm³/1000 strokes : 65.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000s. : 3.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Del. quantity
 cm3/1000 strokes : 62.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Del. quantity
 cm3/1000 strokes : 69.0
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Spread
 cm3/1000 strokes : 5.0
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 500
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5

Shutoff solenoid
 Volt : 12

START TRANSITION

Rated speed rpm : 250
 Del. quantity
 cm3/1000 strokes : 57.0
 Tolerance
 cm3/1000 strokes : 10.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 150
 Del. quantity
 cm3/1000 strokes : 115.0
 Tolerance
 cm3/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : -
 Dimension KF mm : 5,5
 Tolerance mm : $\pm 0,2$
 Dimension MS mm : 1,6
 Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION
 SET

Control lever
 position YA mm : 37,9..39,9

Control lever
 position YB mm : 44,1..49,1

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and
adjustment instructions.
See microcard(s) W400/...

Edition : 21.04.95
Test oil : ISO 4113

Part no. : 0 460 414 015
Pump designation : VE4/11F1250L164-1

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8045.06.200
Power KW : 53.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 020

Opening pressure
bar : 172
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Prestroke

E22

(as of UT) mm : 0,2
Tolerance mm : $\pm 0,02$
Check
tolerance mm : $\pm 0,04$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 800

Setting mm : 2.1
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 800

Setting hPa : 4.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 67.5
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 4.0
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 25.0
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 3.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1365
Del. quantity
cm³/1000 strokes : 32.0

Tolerance
 cm³/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm³/1000 strokes : 115.0
 Tolerance
 cm³/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1100

 SV travel mm : 5.2
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 600

 SV travel mm : 0.5
 Tolerance mm : 0.3
 Check
 tolerance mm : 0.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250

 SV travel mm : 5.7
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1250
 Supply pump
 pressure bar : 6.3
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 600

Supply pump
 pressure bar : 3.2
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1250
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1365
 Del. quantity
 cm³/1000 strokes : 32.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000s. : 6.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1395
 Del. quantity
 cm³/1000 strokes : 12.0
 Check tolerance
 cm³/1000s. : 8.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1430
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000s. : 1.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : 61.0
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Del. quantity
 cm3/1000 strokes : 62.0
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 Del. quantity
 cm3/1000 strokes : 67.5
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5

IDLE DELIVERY

Rated speed rpm : 480
 Del. quantity
 cm3/1000 strokes : 1.5

Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 425
 Del. quantity
 cm3/1000 strokes : 5.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

START TRANSITION

Rated speed rpm : 250
 Del. quantity
 cm3/1000 strokes : 50.0
 Tolerance
 cm3/1000 strokes : 10.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 150
 Del. quantity
 cm3/1000 strokes : 115.0
 Tolerance
 cm3/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : -
 Dimension KF mm : 5,2
 Tolerance mm : $\pm 0,2$
 Dimension MS mm : 1,6
 Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION
 SET

Control lever
 position YA mm : 37,9..39,9

Control lever
position YB mm : 43,6..48,6

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 21.04.95
Test oil : ISO 4113

Part no. : 0 460 414 024
Pump designation : VE4/11F1250L164-2

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8045.06.220
Power KW : 48.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 020

Opening pressure
bar : 172
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Prestroke

E26

(as of UT) mm : 0,2
Tolerance mm : $\pm 0,02$
Check
tolerance mm : $\pm 0,04$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 800
Setting mm : 3.2
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 800
Setting hPa : 4.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 62.5
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 4.0
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 3.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1350
Del. quantity
cm³/1000 strokes : 45.0

Tolerance
 cm³/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm³/1000 strokes : 115.0
 Tolerance
 cm³/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1000
 SV travel mm : 5.2
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 600
 SV travel mm : 1.6
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
 SV travel mm : 5.8
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1250
 Supply pump
 pressure bar : 6.4
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 600

Supply pump
 pressure bar : 3.5
 Tolerance hPa : 3.5
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1250
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Overflow quantity
 ccm/10s : 62.5
 Tolerance
 ccm/10s : 20.8

Check tolerance
 ccm/10s : 20.8
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1350
 Del. quantity
 cm³/1000 strokes : 45.0
 Tolerance
 cm³/1000 strokes : 2.0
 Check tolerance
 cm³/1000s. : 6.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1400
 Del. quantity
 cm³/1000 strokes : 13.0
 Check tolerance
 cm³/1000s. : 8.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1450
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000s. : 1.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 53.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 59.0
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Del. quantity
cm3/1000 strokes : 62.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5

IDLE DELIVERY

Rated speed rpm : 450
Del. quantity
cm3/1000 strokes : 1.5

Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 250
Del. quantity
cm3/1000 strokes : 40.0
Tolerance
cm3/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 150
Del. quantity
cm3/1000 strokes : 125.0
Tolerance
cm3/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : -
Dimension KF mm : 5,2
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,6
Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 37,9..39,9

Control lever
position YB mm : 44,2..49,6

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 12.12.95
Test oil : ISO 4113

Part no. : 0 460 406 049
Pump designation : VE6/10F2400L216

Customer-spec. information

Customer : VW
Motor : 087T-Vol LLK
Power KW : 90.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 000

Opening pressure
bar : 147
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500
Aneroid pressure
hPa : 800
Setting mm : 1.7
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500
Aneroid pressure
hPa : 800
Setting hPa : 6.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1500
Aneroid pressure
hPa : 800
Del. quantity
cm3/1000 strokes : 46.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 26.0
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12
Check tolerance
cm3/1000S. : 3.0

IDLE SETTING

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 8.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

Spread
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000S. : 3.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2675
Pressure hPa : 800
Del. quantity
cm³/1000 strokes : 16.0
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2400
Aneroid pressure
hPa : 800
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1200
Aneroid pressure
hPa : 800

SV travel mm : 0.8
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 2000
Aneroid pressure
hPa : 800

SV travel mm : 3.1

Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2400
Aneroid pressure
hPa : 800
Supply pump
pressure bar : 8.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Aneroid pressure
hPa : 800
Supply pump
pressure bar : 3.6
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 600
Overflow quantity
ccm/10s : 62.5
Tolerance
ccm/10s : 20.8

Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 2400
Aneroid pressure
hPa : 800
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2675
Aneroid pressure
hPa : 800
Del. quantity
cm³/1000 strokes : 16.0

Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2850
Aneroid pressure
hPa : 800
Del. quantity
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2575
Aneroid pressure
hPa : 800
Del. quantity
cm³/1000 strokes : 30.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 800
Aneroid pressure
hPa : 300
Del. quantity
cm³/1000 strokes : 34.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2400
Aneroid pressure
hPa : 800
Del. quantity
cm³/1000 strokes : 38.5
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Aneroid pressure
hPa : 800
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : 1.5

Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1500
Aneroid pressure
hPa : 800
Del. quantity
cm³/1000 strokes : 46.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.2
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 415
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 415
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 2.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000S. : 2.0
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 20.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 230
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 6,4
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,8
Tolerance mm : $\pm 0,2$
TLA travel mm : 12,7

CONTROL LEVER POSITION SET

Control lever
position YA mm : 8,5...10,5

Control lever
position YB mm : 71,0...89,6

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 23.06.95
Test oil : ISO 4113

Part no. : 0 460 485 023
Pump designation : VE5/8F2100L457-2

Customer-spec. information

Customer : VW
Motor : 2,4L WK-SD T4

TEST BENCH REQUIREMENTS

Calibrating-oil return

temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 000

Opening pressure
bar : 147
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 7.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

F05

Rated speed rpm : 1500

Setting mm : 4.3
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500

Setting hPa : 7.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 540
Del. quantity
cm3/1000 strokes : 7.0
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 60.0
Tolerance
cm3/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -7.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -1.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1790
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1100

SV travel mm : 1.6
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1790

Supply pump
pressure bar : 8.1
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1100
Supply pump
pressure bar : 6.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000s. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2600

Del. quantity
cm3/1000 strokes : 3.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2100
Del. quantity
cm3/1000 strokes : 29.5
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 1850
Del. quantity
cm3/1000 strokes : 32.5
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 33.3
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5

Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

RESIDUAL QUANTITY

Rated speed rpm : 490
Del. quantity
cm3/1000 strokes : 7.8
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.5
Shutoff solenoid
Volt : 12

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -10.5
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -1.2
Tolerance
cm3/1000 strokes : 0.1
Check tolerance
cm3/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Supply pump
pressure bar : -1.0
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 27.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,8
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,4
Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 32,8..34,8

Control lever
position YB mm : 60,5..71,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 21.04.95
Test oil : ISO 4113

Part no. : 0 460 485 030
Pump designation : VE5/8F2100L457-5

Customer-spec. information

Customer : VW
Motor : 2,4L WK-SD T4
Power KW : 57.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 000

Opening pressure
bar : 147
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500

Setting mm : 4.3
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500

Setting hPa : 7.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 540
Del. quantity
cm3/1000 strokes : 7.0
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 60.0
Tolerance
cm3/1000 strokes : 25.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -7.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -1.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1790
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1100

SV travel mm : 1.6
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1790
Supply pump
pressure bar : 8.1
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1500

Rated speed rpm : 1250

Rated speed rpm : 1100
Supply pump
pressure bar : 6.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 5.0

Check tolerance
cm3/1000S. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2600
Del. quantity
cm3/1000 strokes : 3.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2100
Del. quantity
cm3/1000 strokes : 29.5
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 1850
Del. quantity
cm3/1000 strokes : 32.5
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 33.3
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 415

Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

RESIDUAL QUANTITY

Rated speed rpm : 490
Del. quantity
cm3/1000 strokes : 7.8
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.5
Shutoff solenoid
Volt : 12

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -10.5
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -1.2

Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Supply pump
pressure bar : -1.0
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 27.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,8
Tolerance mm : +0,2
Dimension MS mm : 1,4
Tolerance mm : +0,2

CONTROL LEVER POSITION SET

Control lever
position YA mm : 32,8..34,8

Control lever
position YB mm : 60,5..71,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 05.03.96
Test oil : ISO 4113

Part no. : 0 460 403 015
Pump designation : VE3/10F1500L481

Customer-spec. information

Customer : VM
Motor : HR 394 HT
Power KW : 51.0

TEST BENCH REQUIREMENTS

Calibrating-oil return

temperature °C : 45
Tolerance °C : 1

Overflow restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1200
Aneroid pressure hPa : 1000
Setting mm : 2.6
Tolerance mm : 0.2
Shutoff solenoid Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1200
Aneroid pressure hPa : 1000
Setting hPa : 5.9
Tolerance hPa : 0.3
Shutoff solenoid Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1200
Aneroid pressure hPa : 1000
Del. quantity cm3/1000 strokes : 67.5
Tolerance cm3/1000 strokes : 0.5
Spread cm3/1000 strokes : 3.5
Check tolerance cm3/1000S. : 4.0
Shutoff solenoid Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 600
Del. quantity cm3/1000 strokes : 59.5
Tolerance cm3/1000 strokes : 0.5
Shutoff solenoid Volt : 12
Check tolerance cm3/1000S. : 4.0

IDLE SETTING

Rated speed rpm : 400
Del. quantity cm3/1000 strokes : 12.5
Tolerance cm3/1000 strokes : 2.0
Shutoff solenoid Volt : 12

Spread
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000s. : 3.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1570
Pressure hPa : 1000
Del. quantity
cm3/1000 strokes : 50.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 85.0
Tolerance
cm3/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1200
Del. quantity
cm3/1000 strokes : -7.0
Tolerance
cm3/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : -0.2
Tolerance
cm3/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200
Del. quantity
cm3/1000 strokes : -0.9

Tolerance
cm3/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000
SV travel mm : 3.9
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
SV travel mm : 1.7
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 7.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 4.1
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 97.2

Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 62.5
Tolerance
ccm/10s : 20.8

Check tolerance
ccm/10s : 20.8
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1570
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 50.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 6.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 1670
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Aneroid pressure
hPa : 350

LDA/
HBA stroke mm : 5.0
Del. quantity
cm³/1000 strokes : 62.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 65.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 57.5
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 68.0
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 67.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Spread
 cm3/1000 strokes : 5.0
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 440
 Del. quantity
 cm3/1000 strokes : 5.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 550
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Shutoff solenoid
 Volt : 12

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1200
 Del. quantity
 cm3/1000 strokes : -16.0
 Tolerance
 cm3/1000 strokes : 4.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200
 Del. quantity
 cm3/1000 strokes : -0.9

Tolerance
 cm3/1000 strokes : 0.1
 Check tolerance
 cm3/1000S. : 0.1
 Shutoff solenoid
 Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1200
 Del. quantity
 cm3/1000 strokes : 5.0
 Tolerance
 cm3/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200
 SV travel mm : -1.7
 Tolerance mm : 0.4
 Shutoff solenoid
 Volt : 12

START TRANSITION

Rated speed rpm : 450
 Del. quantity
 cm3/1000 strokes : 60.0
 Tolerance
 cm3/1000 strokes : 10.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 250
 Del. quantity
 cm3/1000 strokes : 85.0
 Tolerance
 cm3/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
 HBA stroke mm : 5.0
 Dimension K mm : 3.3
 Tolerance mm : $\pm 0,1$
 Dimension KF mm : 6,0,
 Tolerance mm : $\pm 0,2$
 Dimension MS mm : 0.8
 Tolerance mm : $\pm 0,2$

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 06.12.95
Test oil : ISO 4113

Part no. : 0 460 404 075
Pump designation : VE4/10F2100L503

Customer-spec. information
Customer : VM
Motor : HR 425 SLIRF
Power KW : 90.0

TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.75

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde assembly : 1 688 901 022

Opening pressure bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 500
Aneroid pressure hPa : 1000

Setting mm : 7.7
Tolerance mm : 0.2
Shutoff solenoid Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 500
Aneroid pressure hPa : 1000

Setting hPa : 5.9
Tolerance hPa : 0.3
Shutoff solenoid Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1500
Aneroid pressure hPa : 1000
Del. quantity cm3/1000 strokes : 66.0
Tolerance cm3/1000 strokes : 0.5
Spread cm3/1000 strokes : 3.0
Check tolerance cm3/1000s. : 3.0
Shutoff solenoid Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 700
Del. quantity cm3/1000 strokes : 42.0
Tolerance cm3/1000 strokes : 0.5
Shutoff solenoid Volt : 12
Check tolerance cm3/1000s. : 3.0

IDLE SETTING

Rated speed rpm : 450
Del. quantity cm3/1000 strokes : 12.0
Tolerance cm3/1000 strokes : 2.0
Shutoff solenoid Volt : 12
Spread cm3/1000 strokes : 3.0
Check tolerance cm3/1000s. : 3.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2300
 Pressure hPa : 1000
 Del. quantity
 cm³/1000 strokes : 38.0
 Tolerance
 cm³/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm³/1000 strokes : 65.0
 Tolerance
 cm³/1000 strokes : 17.0
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000

SV travel mm : 9.8
 Tolerance mm : 0.5
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 150
 Aneroid pressure
 hPa : 1000

SV travel mm : 5.5
 Tolerance mm : 1.8
 Check
 tolerance mm : 1.8
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000

SV travel mm : 0.5
 Tolerance mm : 0.5
 Check
 tolerance mm : 0.5

Shutoff solenoid
 Volt : 12

Timing device
 solenoid Volt : 100

Rated speed rpm : 1000
 Aneroid pressure
 hPa : 1000

SV travel mm : 9.0
 Tolerance mm : 0.5

Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1000
 Aneroid pressure
 hPa : 1000

SV travel mm : 0.3
 Tolerance mm : 0.3

Check
 tolerance mm : 0.3
 Shutoff solenoid
 Volt : 12

Timing device
 solenoid Volt : 100

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000

Supply pump
 pressure bar : 8.0
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 150
 Aneroid pressure
 hPa : 1000

Supply pump
 pressure bar : 4.8
 Tolerance hPa : 0.8
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1000
 Aneroid pressure
 hPa : 1000

Supply pump
 pressure bar : 6.5
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 700
 Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 83.3
 Tolerance
 ccm/10s : 55.5

Check tolerance
 ccm/10s : 55.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 111.1
 Tolerance
 ccm/10s : 55.5

Check tolerance
 ccm/10s : 55.5
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2300
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 38.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2460
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 7.5
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 700
 Aneroid pressure
 hPa : 400
 Del. quantity
 cm3/1000 strokes : 54.0
 Tolerance
 cm3/1000 strokes : 0.5

Check tolerance
 cm3/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 63.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 700
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 69.0
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1500
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 66.0
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 2.0
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 450
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5

IDLE DELIVERY

Rated speed rpm : 800
 Del. quantity
 cm3/1000 strokes : 4.0

Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

 Rated speed rpm : 500
 Del. quantity
 cm³/1000 strokes : 6.0
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 5.0
 Shutoff solenoid
 Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 50.0
 Tolerance
 cm³/1000 strokes : 1.0
 Check tolerance
 cm³/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

START TRANSITION

Rated speed rpm : 550
 Del. quantity
 cm³/1000 strokes : 40.0
 Tolerance
 cm³/1000 strokes : 10.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 400
 Del. quantity
 cm³/1000 strokes : 65.0
 Tolerance
 cm³/1000 strokes : 17.0
 Shutoff solenoid
 Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7
 Tolerance mm : $\pm 0,1$

Dimension KF mm : 5,2
 Tolerance mm : $\pm 0,2$
 KSB travel mm : 8,5

POTENTIOMETER SET

1. measurement
 voltage Volt : 5,0
 1. measurement
 voltage Volt : 2,31

MICROSWITCH SET

mm : ARF 12,0

CONTROL LEVER POSITION SET

Control lever
 position YA mm : 43.2..45,2

Control lever
 position YB mm : 23,5..30,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 04.04.95
Test oil : ISO 4113

Part no. : 0 460 404 083
Pump designation : VE4/10F2100L503-1

Customer-spec. information

Customer : VM
Motor : HR 425 SLIRF
Power KW : 85.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.75

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 500
Aneroid pressure
hPa : 1000
Setting mm : 7.7
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 500
Aneroid pressure
hPa : 1000
Setting hPa : 5.9
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 66.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 700
Del. quantity
cm3/1000 strokes : 42.0
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12
Check tolerance
cm3/1000S. : 3.0

IDLE SETTING

Rated speed rpm : 450
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

Spread
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 3.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2300
Pressure hPa : 1000
Del. quantity
cm³/1000 strokes : 38.0
Tolerance
cm³/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 17.0
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2100
Aneroid pressure
hPa : 1000
Tolerance mm : 0.5
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 150
Aneroid pressure
hPa : 1000

SV travel mm : 5.5
Tolerance mm : 1.8
Check
tolerance mm : 1.8
Shutoff solenoid
Volt : 12

Rated speed rpm : 2100
Aneroid pressure
hPa : 1000

SV travel mm : 0.5

Tolerance mm : 0.5
Check
tolerance mm : 0.5
Shutoff solenoid
Volt : 12

Timing device
solenoid Volt : 100

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000

SV travel mm : 9.0
Tolerance mm : 0.5
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000

SV travel mm : 0.3
Tolerance mm : 0.3
Check
tolerance mm : 0.3
Shutoff solenoid
Volt : 12

Timing device
solenoid Volt : 100

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2100
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 8.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 150
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 4.8
Tolerance hPa : 0.8
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 6.5
Tolerance hPa : 0.3

Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 111.1
Tolerance
ccm/10s : 55.5

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 700
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 83.3
Tolerance
ccm/10s : 55.5

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2300
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 38.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2460
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 7.5
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 700

Aneroid pressure
hPa : 400

LDA/
HBA stroke mm : 6.7
Del. quantity
cm³/1000 strokes : 54.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2100
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 63.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 700
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 69.0
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 66.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.0
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 450
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5

Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 450
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 4.0
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 6.0
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 5.0
Shutoff solenoid
Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 50.0
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 2.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 550
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 17.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
HBA stroke mm : 6.7
Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,4
Tolerance mm : $\pm 0,2$
Dimension MS mm : 0,8
Tolerance mm : $\pm 0,2$

POTENTIOMETER SET

1. measurement
voltage Volt : 5,0
1. measurement
voltage Volt : 2,31

MICROSWITCH SET

: ARF 12,0

CONTROL LEVER POSITION SET

Control lever
position YA mm : 43,2..45,2
Control lever
position YB mm : 23,5..30,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 28.06.93
Test oil : ISO 4113
Part no. : 0 460 414 101
Pump designation : VE4/11F1900L519

Customer-spec. information
Customer : PENTA
Motor : TAMD 31
Power KW : 96.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 55
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 110

Opening pressure
bar : 250
Tolerance bar : 3

Test Lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Prestroke

(as of UT) mm : 0,3
Tolerance mm : +-0,02
Check
tolerance mm : +-0,04

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000

Setting mm : 2.0
Tolerance mm : 0.2

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000

Setting hPa : 6.7
Tolerance hPa : 0.3

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 57.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 5.0

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 650
Del. quantity
cm3/1000 strokes : 35.0
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 5.0

IDLE SETTING

Rated speed rpm : 300
Del. quantity
cm3/1000 strokes : 13.0
Tolerance
cm3/1000 strokes : 2.0
Spread
cm3/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 6.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2150
Pressure hPa : 1000
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 45.0
Tolerance
cm³/1000 strokes : 25.0

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1900
Aneroid pressure
hPa : 1000
SV travel mm : 4.4
Tolerance mm : 0.4
Check
tolerance mm : 0.7

Rated speed rpm : 1700
Aneroid pressure
hPa : 1000

SV travel mm : 3.1
Tolerance mm : 0.5
Check
tolerance mm : 0.7

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1900
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 8.0
Tolerance hPa : 0.3

Rated speed rpm : 750
Aneroid pressure
hPa : 1000

Supply pump
pressure bar : 4.1
Tolerance hPa : 0.3

OVERFLOW QUANTITY

Rated speed rpm : 650
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2

Rated speed rpm : 1900
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2150
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.0

Rated speed rpm : 2250
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

Rated speed rpm : 900
Aneroid pressure
hPa : 300

LDA/
HBA stroke mm : 7,5
Del. quantity
cm³/1000 strokes : 47.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 3.0

Rated speed rpm : 1900
 Aneroid pressure hPa : 1000
 Del. quantity cm³/1000 strokes : 55.0
 Tolerance cm³/1000 strokes : 1.5
 Check tolerance cm³/1000S. : 3.0

Rated speed rpm : 1200
 Aneroid pressure hPa : 1000
 Del. quantity cm³/1000 strokes : 58.5
 Tolerance cm³/1000 strokes : 2.5

Rated speed rpm : 750
 Aneroid pressure hPa : 1000
 Del. quantity cm³/1000 strokes : 58.5
 Tolerance cm³/1000 strokes : 2.5

Rated speed rpm : 1500
 Aneroid pressure hPa : 1000
 Del. quantity cm³/1000 strokes : 57.0
 Tolerance cm³/1000 strokes : 0.5
 Check tolerance cm³/1000S. : 2.5

MECHANICAL SHUTOFF

Rated speed rpm : 1900
 Aneroid pressure hPa : 1000
 Del. quantity cm³/1000 strokes : 1.5
 Tolerance cm³/1000 strokes : 1.5
 Spread cm³/1000 strokes : 5.0
 Check tolerance cm³/1000S. : 1.5
 Spread cm³/1000 strokes : 5.0

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 300

Del. quantity cm³/1000 strokes : 1.5
 Tolerance cm³/1000 strokes : 1.5
 Check tolerance cm³/1000S. : 1.5
 Spread cm³/1000 strokes : 5.0
 Shutoff solenoid Volt : 12

IDLE DELIVERY

Rated speed rpm : 400
 Del. quantity cm³/1000 strokes : 1.5
 Tolerance cm³/1000 strokes : 1.5
 Check tolerance cm³/1000S. : 1.5

Rated speed rpm : 250
 Del. quantity cm³/1000 strokes : 23.0
 Tolerance cm³/1000 strokes : 6.0

START TRANSITION

Rated speed rpm : 500
 Del. quantity cm³/1000 strokes : 35.0
 Tolerance cm³/1000 strokes : 15.0

Rated speed rpm : 300
 Del. quantity cm³/1000 strokes : 80.0
 Tolerance cm³/1000 strokes : 20.0

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
 HBA stroke mm : 7,5
 Dimension KF mm : 5,4
 Tolerance mm : +0,2
 Dimension MS mm : 1,3
 Tolerance mm : +0,2
 SVS dimension mm : 7,5

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 37,2..39,2

Control lever
position YB mm : 53,0..61,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 14.07.95
Test oil : ISO 4113

Part no. : 0 460 485 031
Pump designation : VE5/8F2100L525-6

Customer-spec. information
Customer : VW
Motor : 2,4l SD
Power KW : 57.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 000

Opening pressure
bar : 147
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500

Setting mm : 4.3
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500

Setting hPa : 7.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 540
Del. quantity
cm3/1000 strokes : 7.0
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 55.0
Tolerance
cm3/1000 strokes : 20.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -7.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -1.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1790
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1100

SV travel mm : 1.6
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1790
Supply pump
pressure bar : 8.1
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1100
Supply pump
pressure bar : 6.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000s. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2600
 Del. quantity
 cm3/1000 strokes : 3.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2100
 Del. quantity
 cm3/1000 strokes : 29.5
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1850
 Del. quantity
 cm3/1000 strokes : 32.5
 Tolerance
 cm3/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 600
 Del. quantity
 cm3/1000 strokes : 33.3
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : 35.5
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

MECHANICAL SHUTOFF

Rated speed rpm : 2100
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5

Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 415
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 415
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Spread
 cm3/1000 strokes : 5.0
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : -10.5
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : -1.2
 Tolerance
 cm3/1000 strokes : 0.1
 Check tolerance
 cm3/1000S. : 0.1

Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Supply pump
pressure bar : -1.0
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 27.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,8
Tolerance mm : +0,2

Dimension MS mm : 1,4
Tolerance mm : +0,2

POTENTIOMETER SET

1. measurement
voltage Volt : 5,0
1. measurement
voltage Volt : 0,7

CONTROL LEVER POSITION SET

Control lever
position YA mm : 32,8..34,8
Control lever
position YB mm : 61,5..68,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 25.01.96
Test oil : ISO 4113

Part no. : 0 460 426 219
Pump designation : VE6/12F1950L528

Customer-spec. information
Customer : PENTA
Motor : KAD 42
Power KW : 169.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 55
Tolerance °C : 1

Overflow
restriction mm : 0.75

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 110

Opening pressure
bar : 250
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Prestroke

G06

(as of UT) mm : 0,3
Tolerance mm : $\pm 0,02$
Check
tolerance mm : $\pm 0,04$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500
Aneroid pressure
hPa : 1500

Setting mm : 3.2
Tolerance mm : 0.1

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500
Aneroid pressure
hPa : 1500

Setting hPa : 8.3
Tolerance hPa : 0.3

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1800
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 89.0
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 5.0

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 42.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 5.0

IDLE SETTING

Rated speed rpm : 325
Del. quantity
cm³/1000 strokes : 9.0
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 5.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2180
Pressure hPa : 1500
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : 2.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 62.0
Tolerance
cm³/1000 strokes : 20.0

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1800
Aneroid pressure
hPa : 1500
SV travel mm : 4.9
Tolerance mm : 0.4
Check
tolerance mm : 0.7

Rated speed rpm : 1250
Aneroid pressure
hPa : 1500

SV travel mm : 1.4
Tolerance mm : 0.4
Check
tolerance mm : 0.7

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1800
Aneroid pressure
hPa : 1500
Supply pump
pressure bar : 9.2
Tolerance hPa : 0.3

Rated speed rpm : 1250
Aneroid pressure
hPa : 1500

Supply pump
pressure bar : 7.6
Tolerance hPa : 0.3

OVERFLOW QUANTITY

Rated speed rpm : 600
Aneroid pressure
hPa : 1500
Overflow quantity
ccm/10s : 111.1
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2

Rated speed rpm : 1950
Aneroid pressure
hPa : 1500
Overflow quantity
ccm/10s : 138.8
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2180
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000S. : 6.0

Rated speed rpm : 2050
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 7.0
Check tolerance
cm³/1000S. : 8.0

Rated speed rpm : 2300
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

Rated speed rpm : 800
Aneroid pressure
hPa : 750

LDA/
HBA stroke mm : 7,5
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 4.0

Rated speed rpm : 1950
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 88.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000S. : 3.5

Rated speed rpm : 1100
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 79.0
Tolerance
cm³/1000 strokes : 2.5

Rated speed rpm : 1250
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 86.0
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 3.5

Rated speed rpm : 1500
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 91.0
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 3.5

Rated speed rpm : 1800
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 89.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 3.0

MECHANICAL SHUTOFF

Rated speed rpm : 1950
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 325
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0
Shutoff solenoid
Volt : 12

IDLE DELIVERY

Rated speed rpm : 450
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

START TRANSITION

Rated speed rpm : 450
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : 15.0

Rated speed rpm : 275

Del. quantity
cm³/1000 strokes : 75.0
Tolerance
cm³/1000 strokes : 25.0

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
HBA stroke mm : 7,5
Dimension KF mm : KOT
MS1 dimension mm : 1,72
Tolerance mm : +0,15/-0,1

CONTROL LEVER POSITION SET

Control lever
position YA mm : 37,2..39,2

Control lever
position YB mm : 55,1..62,9

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 14.07.95
Test oil : ISO 4113

Part no. : 0 460 485 032
Pump designation : VE5/8F2100L545-6

Customer-spec. information

Customer : VW
Motor : 2,4l SD
Power KW : 57.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 000

Opening pressure
bar : 147
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 2.4
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Setting hPa : 6.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 540
Del. quantity
cm3/1000 strokes : 7.0
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 60.0
Tolerance
cm3/1000 strokes : 25.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -7.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.4
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1790
SV travel mm : 5.7
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
SV travel mm : 0.7
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1790
Supply pump
pressure bar : 7.5
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Supply pump
pressure bar : 5.3
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6
Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2
Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 6.0

Shutoff solenoid
Volt : 12

Rated speed rpm : 2600
Del. quantity
cm3/1000 strokes : 3.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2100
Del. quantity
cm3/1000 strokes : 31.0
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 33.8
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

RESIDUAL QUANTITY

Rated speed rpm : 490
Del. quantity
cm3/1000 strokes : 7.8
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.5
Shutoff solenoid
Volt : 12

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -6.5
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -0.4
Tolerance
cm3/1000 strokes : 0.1
Check tolerance
cm3/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500

Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Supply pump
pressure bar : -1.0
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 27.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,8
Tolerance mm : +0,2
Dimension MS mm : 1,4
Tolerance mm : +0,2

CONTROL LEVER POSITION SET

Control lever
position YA mm : 32,8..34,8

Control lever
position YB mm : 60,5..71,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 06.09.95

Test oil : ISO 4113

Part no. : 0 460 485 034

Pump designation : VE5/8F2100L545-7

Customer-spec. information

Customer : VW

Motor : 2,4l SD

Power KW : 57.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return

temperature °C : 45

Tolerance °C : 1

Overflow

restriction mm : 0.55

Inlet press. bar : 0.35

Tolerance bar : 0.05

Test nozzle holde
assembly

: 1 688 901 000

Opening pressure
bar

: 147

Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00

x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 2.4

Tolerance mm : 0.2

Shutoff solenoid

Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Setting hPa : 6.0

Tolerance hPa : 0.3

Shutoff solenoid

Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250

Del. quantity

cm3/1000 strokes : 36.5

Tolerance

cm3/1000 strokes : 0.5

Spread

cm3/1000 strokes : 2.0

Shutoff solenoid

Volt : 12

HOUSING-FIXED IDLE SPRING

RESIDUAL QUANTITY SETTING

Rated speed rpm : 540

Del. quantity

cm3/1000 strokes : 7.0

Tolerance

cm3/1000 strokes : 0.5

Shutoff solenoid

Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400

Del. quantity

cm3/1000 strokes : 12.0

Tolerance

cm3/1000 strokes : 2.0

Shutoff solenoid

Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity

cm3/1000 strokes : 60.0

Tolerance

cm3/1000 strokes : 25.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -7.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.4
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1790
SV travel mm : 5.7
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
SV travel mm : 0.7
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1790
Supply pump
pressure bar : 7.5
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Supply pump
pressure bar : 5.3
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6
Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2
Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000s. : 6.0

Shutoff solenoid
Volt : 12

Rated speed rpm : 2600
Del. quantity
cm3/1000 strokes : 3.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2100
Del. quantity
cm3/1000 strokes : 31.0
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 33.8
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

RESIDUAL QUANTITY

Rated speed rpm : 490
Del. quantity
cm3/1000 strokes : 7.8
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.5
Shutoff solenoid
Volt : 12

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -6.5
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -0.4
Tolerance
cm3/1000 strokes : 0.1
Check tolerance
cm3/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500

Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Supply pump
pressure bar : -1.0
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 27.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,8
Tolerance mm : +0,2
Dimension MS mm : 1,4
Tolerance mm : +0,2

CONTROL LEVER POSITION SET

Control lever
position YA mm : 32,8..34,8

Control lever
position YB mm : 60,5..71,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 15.02.96

Test oil : ISO 4113

Part no. : 0 460 404 078

Pump designation : VE4/10F2100L553

Customer-spec. information

Customer : VM

Motor : 425 CLIRZ/CLIRX

TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.75

Inlet press. bar : 0.35

Tolerance bar : 0.05

Test nozzle holde assembly : 1 688 901 022

Opening pressure bar : 130

Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00

x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 500

Aneroid pressure hPa : 1000

Setting mm : 7.7

Tolerance mm : 0.2

Shutoff solenoid

Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 500

Aneroid pressure

hPa : 1000

Setting hPa : 5.9

Tolerance hPa : 0.3

Shutoff solenoid

Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1500

Aneroid pressure

hPa : 1000

Del. quantity

cm³/1000 strokes : 68.0

Tolerance

cm³/1000 strokes : 0.5

Spread

cm³/1000 strokes : 3.0

Check tolerance

cm³/1000s. : 3.0

Shutoff solenoid

Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 700

Del. quantity

cm³/1000 strokes : 44.5

Tolerance

cm³/1000 strokes : 0.5

Shutoff solenoid

Volt : 12

Check tolerance

cm³/1000s. : 3.0

IDLE SETTING

Rated speed rpm : 450

Del. quantity

cm³/1000 strokes : 12.0

Tolerance

cm³/1000 strokes : 2.0

Shutoff solenoid

Volt : 12

Spread

cm³/1000 strokes : 3.0

Check tolerance

cm³/1000s. : 3.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2300
 Pressure hPa : 1000
 Del. quantity
 cm3/1000 strokes : 49.0
 Tolerance
 cm3/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 65.0
 Tolerance
 cm3/1000 strokes : 17.0
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000

SV travel mm : 9.8
 Tolerance mm : 0.5
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 150
 Aneroid pressure
 hPa : 1000

SV travel mm : 5.5
 Tolerance mm : 1.8
 Check
 tolerance mm : 1.8
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000

SV travel mm : 0.5
 Tolerance mm : 0.5
 Check
 tolerance mm : 0.5

Shutoff solenoid
 Volt : 12

Timing device
 solenoid Volt : 100

Rated speed rpm : 1000
 Aneroid pressure
 hPa : 1000

SV travel mm : 9.0
 Tolerance mm : 0.5
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1000
 Aneroid pressure
 hPa : 1000

SV travel mm : 0.3
 Tolerance mm : 0.3
 Check
 tolerance mm : 0.3
 Shutoff solenoid
 Volt : 12

Timing device
 solenoid Volt : 100

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000

Supply pump
 pressure bar : 8.0
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 150
 Aneroid pressure
 hPa : 1000

Supply pump
 pressure bar : 4.8
 Tolerance hPa : 0.8
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1000
 Aneroid pressure
 hPa : 1000

Supply pump
 pressure bar : 6.5
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 111.1
 Tolerance
 ccm/10s : 55.5
 Check tolerance
 ccm/10s : 55.5
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2300
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 49.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2450
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 7.0
 Check tolerance
 cm3/1000S. : 5.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2650
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 700
 Aneroid pressure
 hPa : 500
 Del. quantity
 cm3/1000 strokes : 58.5
 Tolerance
 cm3/1000 strokes : 0.5

Check tolerance
 cm3/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 63.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 700
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 71.0
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1500
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : 68.0
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 2.0
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 450
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5

IDLE DELIVERY

Rated speed rpm : 800
 Del. quantity
 cm3/1000 strokes : 4.0

Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

 Rated speed rpm : 500
 Del. quantity
 cm³/1000 strokes : 5.0
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 5.0
 Shutoff solenoid
 Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 50.0
 Tolerance
 cm³/1000 strokes : 1.0
 Check tolerance
 cm³/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

START TRANSITION

Rated speed rpm : 550
 Del. quantity
 cm³/1000 strokes : 40.0
 Tolerance
 cm³/1000 strokes : 10.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 400
 Del. quantity
 cm³/1000 strokes : 65.0
 Tolerance
 cm³/1000 strokes : 17.0
 Shutoff solenoid
 Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
 Tolerance mm : +0,1

Dimension KF mm : 5,4
 Tolerance mm : +0,2
 Dimension MS mm : 0,8
 Tolerance mm : +0,2

POTENTIOMETER SET

1. measurement
 voltage Volt : 5,0
 1. measurement
 voltage Volt : 2,31

CONTROL LEVER POSITION SET

Control lever
 position YA mm : 29,5..31,5

Control lever
 position YB mm : 47,0..57,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 13.04.95
Test oil : ISO 4113

Part no. : 0 460 414 114
Pump designation : VE4/11F1250L613

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8045.25.210
Power KW : 63.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 027

Opening pressure
bar : 250
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 800
Setting mm : 2.7
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 800
Setting hPa : 6.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 800
Del. quantity
cm3/1000 strokes : 67.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 3.5
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 325
Del. quantity
cm3/1000 strokes : 13.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000S. : 3.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1325
Del. quantity
cm3/1000 strokes : 45.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 90.0

Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1150
SV travel mm : 6.4
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 700
SV travel mm : 1.8
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1250
Supply pump
pressure bar : 8.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 400
Supply pump
pressure bar : 4.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1250
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6
Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 400
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1325
Del. quantity
cm³/1000 strokes : 45.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1300
Del. quantity
cm³/1000 strokes : 55.0
Tolerance
cm³/1000 strokes : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1420
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 12

Aneroid pressure
hPa :
LDA/
HBA stroke mm : 6,2

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 59.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 69.0

Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.5
 Shutoff solenoid
 Volt : 12

 Rated speed rpm : 800
 Del. quantity
 cm3/1000 strokes : 67.5
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 325
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 325
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Spread
 cm3/1000 strokes : 5.0
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 400
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Shutoff solenoid
 Volt : 12

START TRANSITION

Rated speed rpm : 250
 Del. quantity
 cm3/1000 strokes : 65.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 150
 Del. quantity
 cm3/1000 strokes : 100.0
 Tolerance
 cm3/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
 HBA stroke mm : 6,2
 Dimension K mm : 3,3
 Tolerance mm : $\pm 0,1$
 Dimension KF mm : 5,5
 Tolerance mm : $\pm 0,2$
 Dimension MS mm : 0,8
 Tolerance mm : $\pm 0,2$

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 06.09.95
Test oil : ISO 4113

Part no. : 0 460 485 024
Pump designation : VE5/8F2100L632

Customer-spec. information
Customer : VW
Motor : 2.4L WK SD
Power KW : 57.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 000

Opening pressure
bar : 147
Tolerance bar : 3

Test Lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250
Setting mm : 2.4
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250
Setting hPa : 6.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 8.0
Tolerance
cm3/1000 strokes : 1.0
Shutoff solenoid
Volt : 12
Spread
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 3.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 60.0

Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -7.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.4
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1790
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000

SV travel mm : 1.1
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1790
Supply pump
pressure bar : 7.5
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Supply pump
pressure bar : 5.3
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000s. : 6.0

Shutoff solenoid
Volt : 12

Rated speed rpm : 2600
Del. quantity
cm3/1000 strokes : 3.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2100
Del. quantity
cm3/1000 strokes : 31.0
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 33.8
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -6.5
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -0.4
Tolerance
cm3/1000 strokes : 0.1
Check tolerance
cm3/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500

Supply pump
pressure bar : -1.0
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,8
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,4
Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 32,8..34,8

Control lever
position YB mm : 60,5..71,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 09.03.95
Test oil : ISO 4113

Part no. : 0 460 485 027
Pump designation : VE5/8F2100L633-1

Customer-spec. information

Customer : VW
Motor : 2,4L SD f. T4

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 000

Opening pressure
bar : 147
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

H01

Rated speed rpm : 1500

Setting mm : 4.3
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500

Setting hPa : 7.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 8.0
Tolerance
cm3/1000 strokes : 1.0
Shutoff solenoid
Volt : 12
Spread
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 3.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 60.0

Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -7.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -1.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1790
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1100

SV travel mm : 1.6
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

H02

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1790
Supply pump
pressure bar : 8.1
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1100
Supply pump
pressure bar : 6.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000s. : 6.0

Shutoff solenoid
Volt : 12

Rated speed rpm : 2600
Del. quantity
cm3/1000 strokes : 3.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000s. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2100
Del. quantity
cm3/1000 strokes : 29.5
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000s. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 33.3
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000s. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000s. : 2.2
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000s. : 1.5
Spread
cm3/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -10.5
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000s. : 4.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -1.2
Tolerance
cm3/1000 strokes : 0.1
Check tolerance
cm3/1000s. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000s. : 1.5
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Supply pump
pressure bar : -1.0
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,8
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,4
Tolerance mm : $\pm 0,1$

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 32,8..34,8

Control lever
position YB mm : 60,5..71,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 06.09.95
Test oil : ISO 4113

Part no. : 0 460 485 028
Pump designation : VE5/8F2100L633-2

Customer-spec. information

Customer : VW
Motor : 2,4l SD
Power KW : 57.0

TEST BENCH REQUIREMENTS

Calibrating-oil return

temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holder
assembly : 1 688 901 000

Opening pressure
bar : 147
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500
Setting mm : 4.3
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500
Setting hPa : 7.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 8.0
Tolerance
cm3/1000 strokes : 1.0
Shutoff solenoid
Volt : 12
Spread
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000s. : 3.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 60.0

Tolerance
 cm³/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm³/1000 strokes : -7.0
 Tolerance
 cm³/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm³/1000 strokes : -0.2
 Tolerance
 cm³/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm³/1000 strokes : -1.2
 Tolerance
 cm³/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1790
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1100

SV travel mm : 1.6
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1790
 Supply pump
 pressure bar : 8.1
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1100
 Supply pump
 pressure bar : 6.2
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 55.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 600
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 34.7
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
 Del. quantity
 cm³/1000 strokes : 12.0
 Tolerance
 cm³/1000 strokes : 2.0
 Check tolerance
 cm³/1000s. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2300
 Del. quantity
 cm³/1000 strokes : 22.0
 Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000s. : 6.0

Shutoff solenoid
Volt : 12

Rated speed rpm : 2600
Del. quantity
cm3/1000 strokes : 3.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2100
Del. quantity
cm3/1000 strokes : 30.5
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 34.3
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 415
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -10.5
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : -1.2
Tolerance
cm3/1000 strokes : 0.1
Check tolerance
cm3/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500

Supply pump
pressure bar : -1.0
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,8
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,4
Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 32,8..34,8

Control lever
position YB mm : 60,5..71,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 15.06.92
Test oil : ISO 4113

Part no. : 0 460 484 010
Pump designation : VE4/8F2300R171

Customer-spec. information
Customer : PSA
Motor : XUD7

TEST BENCH REQUIREMENTS

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test Lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 3.6
Tolerance mm : 0.2

H09

Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Setting hPa : 4.6
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 28.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity
cm3/1000 strokes : 4.0
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2440
Del. quantity
cm3/1000 strokes : 22.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 62.0
Tolerance
cm3/1000 strokes : 20.0
Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -6.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -1.0
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000
SV travel mm : 7.9
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 800
SV travel mm : 1.2
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
Supply pump
pressure bar : 6.7
Tolerance hPa : 0.3

Shutoff solenoid
Volt : 12

Rated speed rpm : 800
Supply pump
pressure bar : 3.3
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2250
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Overflow quantity
ccm/10s : 62.5
Tolerance
ccm/10s : 20.8

Check tolerance
ccm/10s : 20.8
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2440
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2690
Del. quantity
cm³/1000 strokes : 7.0
Check tolerance
cm³/1000s. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2540
Del. quantity
cm³/1000 strokes : 14.5
Tolerance
cm³/1000 strokes : 3.0

Check tolerance
cm³/1000S. : 4.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2250
Del. quantity
cm³/1000 strokes : 28.5
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 29.0
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2000
Del. quantity
cm³/1000 strokes : 28.5
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 29.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 28.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

MECHANICAL SHUTOFF

Rated speed rpm : 2250

Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 375
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -9.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000S. : 5.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -1.0
Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 5.0

Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 3.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Supply pump
pressure bar : -0.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Tolerance mm : 0.5
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 300
Del. quantity
cm³/1000 strokes : 24.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 200
Del. quantity
cm³/1000 strokes : 64.0
Tolerance
cm³/1000 strokes : 20.0

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,5
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,4
Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 19,7..21,7

Control lever
position YB mm : 84,0..96,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 01.04.95
Test oil : ISO 4113

Part no. : 0 460 416 036
Pump designation : VE6/11F1250R181

Customer-spec. information

Customer : IVECO-FIAT
Motor : 8065.05.200
Power KW : 74.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 020

Opening pressure
bar : 172
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1000
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1000
Setting hPa : 5.5
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 800
Del. quantity
cm3/1000 strokes : 64.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 3.5
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 325
Del. quantity
cm3/1000 strokes : 10.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000S. : 4.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1350
Del. quantity
cm3/1000 strokes : 36.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 120.0
Tolerance
cm3/1000 strokes : 25.0

Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 600
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1250
Supply pump
pressure bar : 6.6
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Supply pump
pressure bar : 3.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1250
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1350
Del. quantity
cm³/1000 strokes : 36.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1400
Del. quantity
cm³/1000 strokes : 5.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 1450
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 54.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 61.0
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 64.0
Tolerance
cm³/1000 strokes : 0.5

Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 325
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 325
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 360
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 250
Del. quantity
cm³/1000 strokes : 50.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 150
Del. quantity
cm³/1000 strokes : 120.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,3
Tolerance mm : +0,2
Dimension MS mm : 1,6
Tolerance mm : +0,2

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 34,9..36,9
Control lever
position YB mm : 45,7..51,1

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 29.06.95
Test oil : ISO 4113

Part no. : 0 460 426 143
Pump designation : VE6/12F1150R225-23

Customer-spec. information
Customer : CDC
Motor : 6 BT -5.9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 027

Opening pressure
bar : 250
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,3
Tolerance mm : +0,02
Outlet : D

Prestroke

(as of UT) mm : 0,3
Tolerance mm : +0,02
Check
tolerance mm : +0,04

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 750
Setting mm : 3.6
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 750
Setting hPa : 3.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1150
Del. quantity
cm³/1000 strokes : 71.5
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 4.0
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 375
Del. quantity
cm³/1000 strokes : 11.0
Tolerance
cm³/1000 strokes : 3.0
Shutoff solenoid
Volt : 12
Spread
cm³/1000 strokes : 5.5
Check tolerance
cm³/1000S. : 7.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1220
 Del. quantity
 cm³/1000 strokes : 53.0
 Tolerance
 cm³/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm³/1000 strokes : 90.0
 Tolerance
 cm³/1000 strokes : 30.0
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1100
 SV travel mm : 5.9
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 SV travel mm : 1.9
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1100
 Supply pump
 pressure bar : 5.1
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Supply pump
 pressure bar : 2.7
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1150
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1220
 Del. quantity
 cm³/1000 strokes : 53.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000s. : 6.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
 Del. quantity
 cm³/1000 strokes : 35.0
 Check tolerance
 cm³/1000s. : 20.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1300
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000s. : 1.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Del. quantity
 cm³/1000 strokes : 77.0
 Tolerance
 cm³/1000 strokes : 2.0

Check tolerance	
cm3/1000S.	: 3.0
Shutoff solenoid	
Volt	: 12
Rated speed rpm	: 500
Del. quantity	
cm3/1000 strokes	: 62.5
Tolerance	
cm3/1000 strokes	: 4.0
Check tolerance	
cm3/1000S.	: 6.0
Shutoff solenoid	
Volt	: 12
Rated speed rpm	: 1150
Del. quantity	
cm3/1000 strokes	: 71.5
Tolerance	
cm3/1000 strokes	: 0.5
Check tolerance	
cm3/1000S.	: 3.0
Shutoff solenoid	
Volt	: 12

MECHANICAL SHUTOFF

Rated speed rpm	: 1150
Del. quantity	
cm3/1000 strokes	: 1.5
Tolerance	
cm3/1000 strokes	: 1.5
Spread	
cm3/1000 strokes	: 5.0
Check tolerance	
cm3/1000S.	: 1.5
Spread	
cm3/1000 strokes	: 5.0
Shutoff solenoid	
Volt	: 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm	: 375
Del. quantity	
cm3/1000 strokes	: 1.5
Tolerance	
cm3/1000 strokes	: 1.5
Check tolerance	
cm3/1000S.	: 1.5
Spread	
cm3/1000 strokes	: 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm	: 375
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Del. quantity	
cm3/1000 strokes	: 1.5
Tolerance	
cm3/1000 strokes	: 1.5
Spread	
cm3/1000 strokes	: 5.0
Check tolerance	
cm3/1000S.	: 1.5
Spread	
cm3/1000 strokes	: 5.0

IDLE DELIVERY

Rated speed rpm	: 450
Del. quantity	
cm3/1000 strokes	: 2.0
Tolerance	
cm3/1000 strokes	: 2.0
Check tolerance	
cm3/1000S.	: 2.0
Shutoff solenoid	
Volt	: 12

START TRANSITION

Rated speed rpm	: 240
Del. quantity	
cm3/1000 strokes	: 40.0
Tolerance	
cm3/1000 strokes	: 20.0
Shutoff solenoid	
Volt	: 12

Rated speed rpm	: 130
Del. quantity	
cm3/1000 strokes	: 100.0
Tolerance	
cm3/1000 strokes	: 30.0
Shutoff solenoid	
Volt	: 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension KF mm	: 5,2
Tolerance mm	: +0,2
MS1 dimension mm	: 1,6
Tolerance mm	: +0.15/-0,1

CONTROL LEVER POSITION SET

Control lever
position YA mm : 35,8..37,8

Control lever
position YB mm : 41,5..47,1

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 13.03.95
Test oil : ISO 4113

Part no. : 0 460 414 124
Pump designation : VE4/11F2250R274-1

Customer-spec. information
Customer : PERKINS
Motor : Prima M 80 T
Power KW : 60.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

H2O

TIMING DEVICE TRAVEL

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000

Setting mm : 3.8
Tolerance mm : 0.2

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000

Setting hPa : 7.1
Tolerance hPa : 0.3

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 61.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 4.0
Check tolerance
cm3/1000S. : 4.0

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 19.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 4.0
Check tolerance
cm3/1000S. : 4.0
Check tolerance
cm3/1000S. : 4.0

IDLE SETTING

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 11.0
Tolerance
cm3/1000 strokes : 1.0
Spread
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2500
 Pressure hPa : 1000
 Del. quantity
 cm³/1000 strokes : 40.0
 Tolerance
 cm³/1000 strokes : 2.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm³/1000 strokes : 80.0
 Tolerance
 cm³/1000 strokes : 18.0

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1900
 Aneroid pressure
 hPa : 1000
 Tolerance mm : 0.5
 Check
 tolerance mm : 0.7

Rated speed rpm : 1100
 Aneroid pressure
 hPa : 1000

SV travel mm : 1.4
 Tolerance mm : 0.5
 Check
 tolerance mm : 0.7

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1900
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 8.0
 Tolerance hPa : 0.3

Rated speed rpm : 600
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 5.1
 Tolerance hPa : 0.3

OVERFLOW QUANTITY

Rated speed rpm : 2250

Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6

Rated speed rpm : 600
 Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2500
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 40.0
 Tolerance
 cm³/1000 strokes : 2.0
 Check tolerance
 cm³/1000s. : 6.0

Rated speed rpm : 2450
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 60.0
 Tolerance
 cm³/1000 strokes : 6.0

Rated speed rpm : 2700
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000s. : 1.5

Rated speed rpm : 600
 Aneroid pressure
 hPa : 300

LDA/
 HBA stroke mm : 6.1
 Del. quantity
 cm³/1000 strokes : 37.0

Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 4.5

Rated speed rpm : 2250
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 66.7
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 3.0

Rated speed rpm : 600
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 58.5
Tolerance
cm3/1000 strokes : 4.0
Check tolerance
cm3/1000S. : 5.0

Rated speed rpm : 1500
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 61.0
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 3.0

MECHANICAL SHUTOFF

Rated speed rpm : 2250
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5

Shutoff solenoid
Volt : 12

IDLE DELIVERY

Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5

Rated speed rpm : 250
Del. quantity
cm3/1000 strokes : 22.0
Tolerance
cm3/1000 strokes : 6.0

START TRANSITION

Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 20.0
Tolerance
cm3/1000 strokes : 10.0

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 35.0
Tolerance
cm3/1000 strokes : 8.0

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
HBA stroke mm : 6.1
Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 6,6
Tolerance mm : $\pm 0,2$
MS1 dimension mm : 1,9
Tolerance mm : $\pm 0,15/-0,1$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 37,0..39,0

Control lever
position YB mm : 57,0..68,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 05.12.92
Test oil : ISO 4113
Part no. : 0 460 414 046
Pump designation : VE4/11F1500R275

Customer-spec. information
Customer : PERKINS
Motor : 500 SERIES

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

BEGINNING OF DELIVERY

Prestroke

(as of UT) mm : 0,5
Tolerance mm : +0,02
Check
tolerance mm : +0,04

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1100
Setting mm : 2.7
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12
KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1100
Setting hPa : 5.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12
KSB/AFB Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1200
Del. quantity
cm3/1000 strokes : 45.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 3.5
Shutoff solenoid
Volt : 12
KSB/AFB Volt : 12

IDLE SETTING

Rated speed rpm : 300
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
KSB/AFB Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1550
 Del. quantity
 cm3/1000 strokes : 32.0
 Tolerance
 cm3/1000 strokes : 5.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 85.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1350
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

Rated speed rpm : 700
 SV travel mm : 0.5
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

Rated speed rpm : 700
 SV travel mm : 2.2
 Tolerance mm : 1.0
 Check
 tolerance mm : 1.2

Shutoff solenoid
 Volt : 12

Rated speed rpm : 1500

SV travel mm : 4.1
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1500
 Supply pump
 pressure bar : 6.7
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 700
 Supply pump
 pressure bar : 3.8
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

KSB/AFB Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1450
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

Rated speed rpm : 600
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1550
Del. quantity
cm³/1000 strokes : 32.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 6.0
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 1570
Del. quantity
cm³/1000 strokes : 16.0
Check tolerance
cm³/1000S. : 10.0
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 1630
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 1450
Del. quantity
cm³/1000 strokes : 45.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 800
Del. quantity
cm³/1000 strokes : 30.0
Tolerance
cm³/1000 strokes : 1.5
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 20.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 1200
Del. quantity
cm³/1000 strokes : 45.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.5
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 300
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

KSB/AFB Volt : 12

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 300
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

KSB/AFB Volt : 12

IDLE DELIVERY

Rated speed rpm : 430
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

Shutoff solenoid
Volt : 12
KSB/AFB Volt : 12
Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 6.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000s. : 4.5
Shutoff solenoid
Volt : 12
KSB/AFB Volt : 12

START TRANSITION

Rated speed rpm : 400
Del. quantity
cm3/1000 strokes : 27.0
Tolerance
cm3/1000 strokes : 8.0
Shutoff solenoid
Volt : 12
KSB/AFB Volt : 12

Rated speed rpm : 300
Del. quantity
cm3/1000 strokes : 37.0
Tolerance
cm3/1000 strokes : 8.0
Shutoff solenoid
Volt : 12
KSB/AFB Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : -
Dimension KF mm : 5,4
Tolerance mm : $\pm 0,2$
MS1 dimension mm : 1,6
Tolerance mm : $+0,15/-0,1$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 37,0..39,0

Control lever
position YB mm : 58,7..69,9

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 11.09.95
Test oil : ISO 4113
Part no. : 0 460 424 036
Pump designation : VE4/12F1400R279

Customer-spec. information
Customer : PERKINS
Motor : NA 4.40 LKW

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 020

Opening pressure
bar : 172
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,0
Outlet : C

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 950
Setting mm : 2.5
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 950
Setting hPa : 5.7
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 800
Del. quantity
cm3/1000 strokes : 77.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 3.5
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 300
Del. quantity
cm3/1000 strokes : 23.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000S. : 3.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1600
Del. quantity
cm3/1000 strokes : 24.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 105.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 800
 SV travel mm : 0.8
 Tolerance mm : 0.3
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1400
 SV travel mm : 3.3
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1400
 Supply pump
 pressure bar : 7.5
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800

Rated speed rpm : 500
 Supply pump
 pressure bar : 3.7
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1400
 Overflow quantity
 ccm/10s : 97.2

Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1600
 Del. quantity
 cm3/1000 strokes : 24.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000s. : 6.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : 57.0
 Tolerance
 cm3/1000 strokes : 6.0
 Check tolerance
 cm3/1000s. : 7.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1680
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000s. : 1.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1400
 Del. quantity
 cm3/1000 strokes : 71.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000s. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Del. quantity
 cm³/1000 strokes : 68.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 Del. quantity
 cm³/1000 strokes : 77.0
 Tolerance
 cm³/1000 strokes : 0.5
 Check tolerance
 cm³/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

MECHANICAL SHUTOFF

Rated speed rpm : 1400
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 300
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 300
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5

IDLE DELIVERY

Rated speed rpm : 400

Del. quantity
 cm³/1000 strokes : 8.5
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 4.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 350
 Del. quantity
 cm³/1000 strokes : 17.5
 Tolerance
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000S. : 5.0
 Shutoff solenoid
 Volt : 12

START TRANSITION

Rated speed rpm : 250
 Del. quantity
 cm³/1000 strokes : 50.0
 Tolerance
 cm³/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 150
 Del. quantity
 cm³/1000 strokes : 115.0
 Tolerance
 cm³/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
 Tolerance mm : +0,1
 Dimension KF mm : KOT
 Dimension MS mm : 1,1
 Tolerance mm : +0,2

CONTROL LEVER POSITION SET

Control lever
 position YA mm : 37,2..39,2

Control lever
position YB mm : 42,7..51,3

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 19.09.94
Test oil : ISO 4113

Part no. : 0 460 484 089
Pump designation : VE4/8F2300R317-7

Customer-spec. information
Customer : RENAULT
Motor : F8Q - 742
Power KW : 47.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 4.3
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Setting hPa : 4.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 31.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity
cm3/1000 strokes : 3.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450
Del. quantity
cm3/1000 strokes : 26.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 55.0
Tolerance
cm3/1000 strokes : 15.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -8.7
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.4
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000

SV travel mm : 8.0
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

SV travel mm : 2.0
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 310

SV travel mm : 1.8
Tolerance mm : 1.2
Check
tolerance mm : 1.2
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 500

SV travel mm : 3.1
Tolerance mm : 1.2
Check
tolerance mm : 1.2
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
Supply pump
pressure bar : 6.7
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Supply pump
pressure bar : 3.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2250
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2

Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450
Del. quantity
cm³/1000 strokes : 26.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2650
Del. quantity
cm³/1000 strokes : 11.0
Check tolerance
cm³/1000S. : 5.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2950
Del. quantity
cm³/1000 strokes : 2.5
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 2.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2250
Del. quantity
cm³/1000 strokes : 32.5
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1625
Del. quantity
cm³/1000 strokes : 31.2
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 2000
Del. quantity
cm³/1000 strokes : 31.3
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 2.3

Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 31.6
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 31.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm³/1000 strokes : -11.0
 Tolerance
 cm³/1000 strokes : 2.0
 Check tolerance
 cm³/1000S. : 2.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm³/1000 strokes : -0.4
 Tolerance
 cm³/1000 strokes : 0.1
 Check tolerance
 cm³/1000S. : 0.1
 Shutoff solenoid
 Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm³/1000 strokes : 5.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
 Supply pump
 pressure bar : -0.4
 Tolerance hPa : 0.2
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
 Tolerance mm : 0.2
 Check
 tolerance mm : 0.3
 Shutoff solenoid
 Volt : 12

START TRANSITION

Rated speed rpm : 310

Del. quantity
 cm³/1000 strokes : 30.0
 Tolerance
 cm³/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 210
 Del. quantity
 cm³/1000 strokes : 60.0
 Tolerance
 cm³/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
 Tolerance mm : +0,1
 Dimension KF mm : 5,5
 Tolerance mm : +0,2
 Dimension MS mm : 1,3
 Tolerance mm : +0,2

MICROSWITCH SET

mm : 0,8...3,0
 : 7,6...8,4

CONTROL LEVER POSITION SET

Control lever
 position YA mm : -

Control lever
 position YB mm : -

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 05.07.95
Test oil : ISO 4113

Part no. : 0 460 484 090
Pump designation : VE4/8F2300R317-8

Customer-spec. information

Customer : RENAULT
Motor : F8Q - 724
Power KW : 47.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250
Setting mm : 4.3
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250
Setting hPa : 4.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 31.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity
cm3/1000 strokes : 3.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450
Del. quantity
cm3/1000 strokes : 26.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 55.0
Tolerance
cm3/1000 strokes : 15.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -8.7
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.4
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000

SV travel mm : 8.0
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

SV travel mm : 2.0
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 310

SV travel mm : 1.8
Tolerance mm : 1.2
Check
tolerance mm : 1.2
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 500

SV travel mm : 3.1
Tolerance mm : 1.2
Check
tolerance mm : 1.2
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
Supply pump
pressure bar : 6.7
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Supply pump
pressure bar : 3.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2250
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6
Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2
Check tolerance
ccm/10s : 22.2

Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450
Del. quantity
cm³/1000 strokes : 26.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2650
Del. quantity
cm³/1000 strokes : 11.0
Check tolerance
cm³/1000S. : 5.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2950
Del. quantity
cm³/1000 strokes : 2.5
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 2.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2250
Del. quantity
cm³/1000 strokes : 32.5
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1625
Del. quantity
cm³/1000 strokes : 31.2
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 2000
Del. quantity
cm³/1000 strokes : 31.3
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 2.3

Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 31.6
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 31.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.3
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -11.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 2.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.4
Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000s. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 3.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Supply pump
pressure bar : -0.4
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Tolerance mm : 0.2
Check
tolerance mm : 0.3
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 310

Del. quantity
cm³/1000 strokes : 30.0
Tolerance
cm³/1000 strokes : 15.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 210
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 15.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,5
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,3
Tolerance mm : $\pm 0,2$

MICROSWITCH
SET

mm : 0,8...3,0
: 7,6...8,4

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 16.03.95
Test oil : ISO 4113

Part no. : 0 460 484 031
Pump designation : VE4/8F2100R357

Customer-spec. information

Customer : VW
Motor : 028.A 1.9L. 45KW

TEST BENCH REQUIREMENTS

Calibrating-oil return

temperature °C : 45
Tolerance °C : 1

Overflow restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holder assembly : 1 688 901 000

Opening pressure bar : 147
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250
Setting mm : 3.7
Tolerance mm : 0.2
Shutoff solenoid Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250
Setting kPa : 6.0
Tolerance hPa : 0.3
Shutoff solenoid Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity cm3/1000 strokes : 36.0
Tolerance cm3/1000 strokes : 0.5
Spread cm3/1000 strokes : 2.0
Shutoff solenoid Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity cm3/1000 strokes : 2.5
Tolerance cm3/1000 strokes : 0.5
Shutoff solenoid Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity cm3/1000 strokes : 12.0
Tolerance cm3/1000 strokes : 2.0
Shutoff solenoid Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity cm3/1000 strokes : 60.0
Tolerance cm3/1000 strokes : 25.0
Shutoff solenoid Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : -7.5
Tolerance
cm3/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : -0.2
Tolerance
cm3/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : -0.4
Tolerance
cm3/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1700

SV travel mm : 4.8
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

SV travel mm : 1.3
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1850
Supply pump
pressure bar : 7.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Supply pump
pressure bar : 4.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1850
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2650
Del. quantity
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000s. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2250
 Del. quantity
 cm3/1000 strokes : 23.0
 Tolerance
 cm3/1000 strokes : 5.0
 Check tolerance
 cm3/1000S. : 6.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1850
 Del. quantity
 cm3/1000 strokes : 33.0
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Del. quantity
 cm3/1000 strokes : 32.0
 Tolerance
 cm3/1000 strokes : 2.5
 Check tolerance
 cm3/1000S. : 5.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Del. quantity
 cm3/1000 strokes : 32.0
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : 36.0
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 425
 Del. quantity
 cm3/1000 strokes : 1.5

Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5

RESIDUAL QUANTITY

Rated speed rpm : 500
 Del. quantity
 cm3/1000 strokes : 3.5
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

CHECKING LOAD-DEPENDENT
 START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -8.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -0.4
 Tolerance
 cm3/1000 strokes : 0.1
 Check tolerance
 cm3/1000S. : 0.1
 Shutoff solenoid
 Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Supply pump
pressure bar : -0.7
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
SV travel mm : -1.2
Tolerance mm : 0.2
Check
tolerance mm : 0.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 28.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,3
Tolerance mm : +0,2
Dimension MS mm : 1,3
Tolerance mm : +0,2

CONTROL LEVER POSITION SET

Control lever
position YA mm : 20,0..22,0

Control lever
position YB mm : 60,5..71,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 06.06.95
Test oil : ISO 4113

Part no. : 0 460 484 102
Pump designation : VE4/8F2100R357-1

Customer-spec. information
Customer : VW
Motor : 1.9L T4 SD
Power KW : 45.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 000

Opening pressure
bar : 147
Tolerance bar : 3

Test Lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 3.7
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Setting hPa : 6.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 36.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity
cm3/1000 strokes : 2.5
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 60.0
Tolerance
cm3/1000 strokes : 25.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -7.5
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.4
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1700

SV travel mm : 4.8
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

SV travel mm : 1.3
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1850
Supply pump
pressure bar : 7.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Supply pump
pressure bar : 4.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1850
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 12.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2650
Del. quantity
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 3.0

Shutoff solenoid
 Volt : 12

Rated speed rpm : 2250
 Del. quantity
 cm3/1000 strokes : 23.0
 Tolerance
 cm3/1000 strokes : 5.0
 Check tolerance
 cm3/1000S. : 6.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1850
 Del. quantity
 cm3/1000 strokes : 33.0
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Del. quantity
 cm3/1000 strokes : 32.0
 Tolerance
 cm3/1000 strokes : 2.5
 Check tolerance
 cm3/1000S. : 5.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Del. quantity
 cm3/1000 strokes : 32.0
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : 36.0
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 425

Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Spread
 cm3/1000 strokes : 5.0
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

RESIDUAL QUANTITY

Rated speed rpm : 500
 Del. quantity
 cm3/1000 strokes : 3.5
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -8.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -0.4

Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Supply pump
pressure bar : -0.7
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
SV travel mm : -1.2
Tolerance mm : 0.2
Check
tolerance mm : 0.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 28.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,3
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,3
Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 20,0..22,0

Control lever
position YB mm : 60,5..71,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 19.06.95
Test oil : ISO 4113

Part no. : 0 460 426 167
Pump designation : VE6/12F1000R369-1

Customer-spec. information
Customer : CDC
Motor : 6BT- 5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 027

Opening pressure
bar : 250
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,5
Tolerance mm : $\pm 0,02$
Outlet : D

Prestroke

(as of UT) mm : 0,2
Tolerance mm : $\pm 0,02$
Check
tolerance mm : $\pm 0,04$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 750
Setting mm : 3.7
Tolerance mm : 0.2
Shutoff solenoid
Volt : 24

SUPPLY PUMP PRESSURE

Rated speed rpm : 750
Setting hPa : 3.9
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 900
Del. quantity
cm³/1000 strokes : 74.9
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 4.0
Shutoff solenoid
Volt : 24

IDLE SETTING

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 7.0
Tolerance
cm³/1000 strokes : 3.0
Shutoff solenoid
Volt : 24
Spread
cm³/1000 strokes : 5.5
Check tolerance
cm³/1000s. : 7.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1045
 Del. quantity
 cm³/1000 strokes : 63.0
 Tolerance
 cm³/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 24

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm³/1000 strokes : 100.0
 Tolerance
 cm³/1000 strokes : 30.0
 Shutoff solenoid
 Volt : 24

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1000
 SV travel mm : 5.2
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
 SV travel mm : 1.8
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 24

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1000
 Supply pump
 pressure bar : 4.9
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
 Supply pump
 pressure bar : 2.9
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

OVERFLOW QUANTITY

Rated speed rpm : 1000
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 24

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1045
 Del. quantity
 cm³/1000 strokes : 63.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000s. : 6.0
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 1100
 Del. quantity
 cm³/1000 strokes : 35.0
 Check tolerance
 cm³/1000s. : 10.0
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 1170
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000s. : 1.5
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 1000
 Del. quantity
 cm³/1000 strokes : 73.5
 Tolerance
 cm³/1000 strokes : 1.5

Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 750
Del. quantity
cm3/1000 strokes : 75.9
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 62.7
Tolerance
cm3/1000 strokes : 4.0
Check tolerance
cm3/1000S. : 6.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 900
Del. quantity
cm3/1000 strokes : 74.9
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 24

MECHANICAL SHUTOFF

Rated speed rpm : 1000
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0
Shutoff solenoid
Volt : 24

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 1.5

Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 540
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Shutoff solenoid
Volt : 24

START TRANSITION

Rated speed rpm : 250
Del. quantity
cm3/1000 strokes : 45.0
Tolerance
cm3/1000 strokes : 15.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 130
Del. quantity
cm3/1000 strokes : 110.0
Tolerance
cm3/1000 strokes : 30.0
Shutoff solenoid
Volt : 24

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension KF mm : 5,2
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,0
Tolerance mm : $\pm 0,02$

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 34,8..38,8

Control lever
position YB mm : 35,7..41,3

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 26.09.95
Test oil : ISO 4113

Part no. : 0 460 416 067
Pump designation : VE6/11F1150R394

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8065.25.220
Power KW : 78.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 020

Opening pressure
bar : 172
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 700
Aneroid pressure
hPa : 1000
Setting mm : 2.4
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 700
Aneroid pressure
hPa : 1000
Setting hPa : 4.6
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 84.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 74.5
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12
Check tolerance
cm3/1000S. : 4.0

IDLE SETTING

Rated speed rpm : 325
Del. quantity
cm3/1000 strokes : 18.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

Spread
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1260
Pressure hPa : 1000
Del. quantity
cm³/1000 strokes : 50.0
Tolerance
cm³/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 110.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Tolerance mm : 0.4
Check
tolerance mm : 0.9
Shutoff solenoid
Volt : 12

Rated speed rpm : 550
Aneroid pressure
hPa : 1000

SV travel mm : 1.2
Tolerance mm : 0.4
Check
tolerance mm : 0.9
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1150
Aneroid pressure
hPa : 1000

Supply pump
pressure bar : 6.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 550
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 3.9
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 500
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 1150
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1260
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 50.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1280
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 34.5

Check tolerance
cm3/1000S. : 5.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Aneroid pressure
hPa : 350

LDA/
HBA stroke mm : 4.7
Del. quantity
cm3/1000 strokes : 79.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1150
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 81.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 650
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 89.0
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Aneroid pressure
hPa : 1000

Del. quantity
cm3/1000 strokes : 86.5
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 84.0
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 325
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 325
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 420
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5

Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 250
Del. quantity
cm³/1000 strokes : 70.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 150
Del. quantity
cm³/1000 strokes : 110.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
HBA stroke mm : 4.7
Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension MS mm : 1,1
Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 34,9..36,9

Control lever
position YB mm : 48,2..53,8

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 13.11.95
Test oil : ISO 4113

Part no. : 0 460 426 179
Pump designation : VE6/12F1250R406

Customer-spec. information
Customer : PERKINS
Motor : Q20 Phaser T6.60

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holder
assembly : 1 688 901 027

Opening pressure
bar : 250
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

BEGINNING OF DELIVERY

Prestroke

(as of UT) mm : 0,25
Tolerance mm : $\pm 0,02$
Check
tolerance mm : $\pm 0,04$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1000
Aneroid pressure
hPa : 1500

Setting mm : 1.6
Tolerance mm : 0.2

SUPPLY PUMP PRESSURE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1500

Setting hPa : 6.2
Tolerance hPa : 0.3

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 700
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 84.5
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000s. : 5.0

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 64.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000s. : 5.0

IDLE SETTING

Rated speed rpm : 325
Del. quantity
cm³/1000 strokes : 10.0
Tolerance
cm³/1000 strokes : 2.0
Spread
cm³/1000 strokes : 5.0

Check tolerance
cm³/1000S. : 5.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1400
Pressure hPa : 1500
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 130.0
Tolerance
cm³/1000 strokes : 30.0

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1100
Aneroid pressure
hPa : 1500
SV travel mm : 2.3
Tolerance mm : 0.4
Check
tolerance mm : 0.7

Rated speed rpm : 900
Aneroid pressure
hPa : 1500
SV travel mm : 0.8
Tolerance mm : 0.4
Check
tolerance mm : 0.7

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1200
Aneroid pressure
hPa : 1500
Supply pump
pressure bar : 7.2
Tolerance hPa : 0.3

Rated speed rpm : 700
Aneroid pressure
hPa : 1500

Supply pump
pressure bar : 5.0
Tolerance hPa : 0.3

OVERFLOW QUANTITY

Rated speed rpm : 500
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2

Rated speed rpm : 1200
Aneroid pressure
hPa : 1500
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1400
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 6.0

Rated speed rpm : 1480
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 3.5

Rated speed rpm : 1350
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 10.0

Rated speed rpm : 700
Aneroid pressure
hPa : 700

Del. quantity
cm³/1000 strokes : 79.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000s. : 3.5

Rated speed rpm : 1200
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 89.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 3.5

Rated speed rpm : 700
Del. quantity
cm³/1000 strokes : 60.5
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000s. : 4.0

Rated speed rpm : 1000
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 83.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 3.5

Rated speed rpm : 700
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 84.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000s. : 3.5

MECHANICAL SHUTOFF

Rated speed rpm : 1200
Aneroid pressure
hPa : 1500
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5

IDLE DELIVERY

Rated speed rpm : 420
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 5.0

START TRANSITION

Rated speed rpm : 230
Del. quantity
cm³/1000 strokes : 70.0
Tolerance
cm³/1000 strokes : 20.0

Rated speed rpm : 130
Del. quantity
cm³/1000 strokes : 140.0
Tolerance
cm³/1000 strokes : 30.0

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension KF mm : 6,0
Tolerance mm : $\pm 0,02$
MS1 dimension mm : 2,0
Tolerance mm : $+0,15/-0,1$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 37,2..39,2

Control lever
position YB mm : 52,4..60,6

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 05.04.95
Test oil : ISO 4113
Part no. : 0 460 424 075
Pump designation : VE4/12F1350R407

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8040.25.4000 TC
Power kW : 85.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 027

Opening pressure
bar : 250
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

BEGINNING OF DELIVERY

Prestroke

K04

(as of UT) mm : 0,3
Tolerance mm : $\pm 0,04$
Check
tolerance mm : $\pm 0,06$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000

Setting mm : 1.6
Tolerance mm : 0.2
Shutoff solenoid
Volt : 24

SUPPLY PUMP PRESSURE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000

Setting hPa : 6.3
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 700
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 79.5
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.0
Shutoff solenoid
Volt : 24

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 600
Del. quantity
cm³/1000 strokes : 46.0
Tolerance
cm³/1000 strokes : 0.5
Shutoff solenoid
Volt : 24
Check tolerance
cm³/1000S. : 5.0

IDLE SETTING

Rated speed rpm : 350
 Del. quantity
 cm³/1000 strokes : 15.0
 Tolerance
 cm³/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 24
 Spread
 cm³/1000 strokes : 3.5
 Check tolerance
 cm³/1000s. : 5.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1525
 Pressure hPa : 1000
 Del. quantity
 cm³/1000 strokes : 33.0
 Tolerance
 cm³/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 24

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm³/1000 strokes : 95.0
 Tolerance
 cm³/1000 strokes : 30.0
 Shutoff solenoid
 Volt : 24

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1100
 Aneroid pressure
 hPa : 1000
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.9
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 1350
 Aneroid pressure
 hPa : 1000

SV travel mm : 4.1
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.9

Shutoff solenoid
 Volt : 24

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1350
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 8.0
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 600
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 4.0
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

OVERFLOW QUANTITY

Rated speed rpm : 1350
 Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 600
 Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 24

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1525
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 33.0
 Tolerance
 cm³/1000 strokes : 3.0

Check tolerance
cm³/1000S. : 6.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1475
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 50.0
Tolerance
cm³/1000 strokes : 8.0
Check tolerance
cm³/1000S. : 10.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1610
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 600
Aneroid pressure
hPa : 375

LDA/
HBA stroke mm : 7.5
Del. quantity
cm³/1000 strokes : 64.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 71.0
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 74.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 600
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 84.5
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 700
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 79.5
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 3.5
Shutoff solenoid
Volt : 24

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5

Spread
cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 475
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 24

Control lever
position YB mm : 42,0..50,0

End of test-specification sheet

START TRANSITION

Rated speed rpm : 250
Del. quantity
cm³/1000 strokes : 55.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 130
Del. quantity
cm³/1000 strokes : 95.0
Tolerance
cm³/1000 strokes : 30.0
Shutoff solenoid
Volt : 24

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
HBA stroke mm : 7.5
Dimension KF mm : 5,4
Tolerance mm : +0,2
MS1 dimension mm : 1,46
Tolerance mm : +0,15/-0,1
KSB travel mm : 10,0

CONTROL LEVER POSITION SET

Control lever
position YA mm : 37,9..39,9

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 05.04.95
Test oil : ISO 4113

Part no. : 0 460 424 076
Pump designation : VE4/12F1350R407-1

Customer-spec. information

Customer : IVECO-FIAT
Motor : 8040.45.4000 TCA
Power KW : 102.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.75

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 027

Opening pressure
bar : 250
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Setting mm : 1.6
Tolerance mm : 0.2
Shutoff solenoid
Volt : 24

SUPPLY PUMP PRESSURE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Setting hPa : 6.5
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 700
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 72.5
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000S. : 5.0
Shutoff solenoid
Volt : 24

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 43.0
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 24
Check tolerance
cm3/1000S. : 5.0

IDLE SETTING

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 15.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 24

Spread
cm³/1000 strokes : 3.5
Check tolerance
cm³/1000S. : 5.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1525
Pressure hPa : 1000
Del. quantity
cm³/1000 strokes : 26.0
Tolerance
cm³/1000 strokes : 3.0
Shutoff solenoid
Volt : 24

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 95.0
Tolerance
cm³/1000 strokes : 30.0
Shutoff solenoid
Volt : 24

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1100
Aneroid pressure
hPa : 1000
Tolerance mm : 0.4
Check
tolerance mm : 0.9
Shutoff solenoid
Volt : 24

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
SV travel mm : 4.1
Tolerance mm : 0.4
Check
tolerance mm : 0.9
Shutoff solenoid
Volt : 24

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000

Supply pump
pressure bar : 7.9
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

Rated speed rpm : 600
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 4.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

OVERFLOW QUANTITY

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 138.8
Tolerance
ccm/10s : 41.6
Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 24

Rated speed rpm : 600
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 24

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1525
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 26.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 6.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1450
Aneroid pressure
hPa : 1000

Del. quantity
cm3/1000 strokes : 53.0
Tolerance
cm3/1000 strokes : 8.0
Check tolerance
cm3/1000S. : 10.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1600
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 600
Aneroid pressure
hPa : 510

LDA/
HBA stroke mm : 6.9
Del. quantity
cm3/1000 strokes : 62.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 65.0
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 65.5
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 600
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 76.5
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 700
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 72.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 24

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 475
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5

Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 24

START TRANSITION

Rated speed rpm : 250
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 130
Del. quantity
cm³/1000 strokes : 95.0
Tolerance
cm³/1000 strokes : 30.0
Shutoff solenoid
Volt : 24

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
HBA stroke mm : 6.9
Dimension K mm : 3,6
Tolerance mm : $\pm 0,1$
Dimension KF mm : 6,4
Tolerance mm : $\pm 0,2$
MS1 dimension mm : 1,75
Tolerance mm : $+0,15/-0,1$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 37,9..39,9

Control lever
position YB mm : 39,0..47,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 05.04.95
Test oil : ISO 4113

Part no. : 0 460 424 075A
Pump designation : VE4/12F1350R407A

Customer-spec. information
Customer : IVECO-FIAT
Motor : 8040.25X.4000

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 027

Opening pressure
bar : 250
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Setting mm : 1.6
Tolerance mm : 0.2
Shutoff solenoid
Volt : 24

SUPPLY PUMP PRESSURE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Setting hPa : 6.3
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 700
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 70.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 3.5
Check tolerance
cm3/1000S. : 5.0
Shutoff solenoid
Volt : 24

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 600
Del. quantity
cm3/1000 strokes : 46.0
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 24
Check tolerance
cm3/1000S. : 5.0

IDLE SETTING

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 15.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 24
Spread
cm3/1000 strokes : 3.5

Check tolerance
cm³/1000S. : 5.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1525
Pressure hPa : 1000
Del. quantity
cm³/1000 strokes : 33.0
Tolerance
cm³/1000 strokes : 3.0
Shutoff solenoid
Volt : 24

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 95.0
Tolerance
cm³/1000 strokes : 30.0
Shutoff solenoid
Volt : 24

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1100
Aneroid pressure
hPa : 1000
Tolerance mm : 0.4
Check
tolerance mm : 0.9
Shutoff solenoid
Volt : 24

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
SV travel mm : 4.1
Tolerance mm : 0.4
Check
tolerance mm : 0.9
Shutoff solenoid
Volt : 24

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 8.0

Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

Rated speed rpm : 600
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 4.0
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

OVERFLOW QUANTITY

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 24

Rated speed rpm : 600
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 24

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1525
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 33.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 6.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1475
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 50.0

Tolerance
cm3/1000 strokes : 4.0
Check tolerance
cm3/1000S. : 10.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1610
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 600
Aneroid pressure
hPa : 375

LDA/
HBA stroke mm : 6.0
Del. quantity
cm3/1000 strokes : 64.5
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 62.0
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 65.0
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 600

Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 75.5
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 700
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 70.0
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 3.5
Shutoff solenoid
Volt : 24

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 475
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5

Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 24

START TRANSITION

Rated speed rpm : 250
Del. quantity
cm³/1000 strokes : 55.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 130
Del. quantity
cm³/1000 strokes : 95.0
Tolerance
cm³/1000 strokes : 30.0
Shutoff solenoid
Volt : 24

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
HBA stroke mm : 6.0
Dimension K mm : 3,6
Tolerance mm : $\pm 0,1$
Dimension KF mm : 6,4
Tolerance mm : $\pm 0,2$
MS1 dimension mm : 1,75
Tolerance mm : $\pm 0,15/-0,1$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 37,9..39,9

Control lever
position YB mm : 42,0..50,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 26.07.94
Test oil : ISO 4113

Part no. : 0 460 494 271
Pump designation : VE4/9F2200R412

Customer-spec. information
Customer : NISSAN-MISA
Motor : LD 20 II-E (PF)
Power KW : 46.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

K16

Plunger stroke mm : 1,0
Tolerance mm : $\pm 0,02$
Outlet : C

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1200

Setting mm : 3.5
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1200

Setting hPa : 5.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 2200
Del. quantity
cm³/1000 strokes : 33.0
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 3.0
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2600
 Del. quantity
 cm3/1000 strokes : 15.0
 Tolerance
 cm3/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 50.0
 Tolerance
 cm3/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 900
 Del. quantity
 cm3/1000 strokes : -9.0
 Tolerance
 cm3/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 900
 Del. quantity
 cm3/1000 strokes : -0.2
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 900
 Del. quantity
 cm3/1000 strokes : -0.8
 Tolerance
 cm3/1000 strokes : 0.1

Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1800
 SV travel mm : 6.4
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

Rated speed rpm : 900
 SV travel mm : 1.9
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

Rated speed rpm : 2200
 SV travel mm : 8.1
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.5
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1800
 Supply pump
 pressure bar : 7.1
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

Rated speed rpm : 900
 Supply pump
 pressure bar : 4.5
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12
 Rated speed rpm : 2200
 Supply pump
 pressure bar : 8.2
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2200
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6
 Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12
 Rated speed rpm : 600
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2
 Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2600
 Del. quantity
 cm³/1000 strokes : 15.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 4.5
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12
 Rated speed rpm : 2350
 Del. quantity
 cm³/1000 strokes : 30.0
 Tolerance
 cm³/1000 strokes : 4.0

Check tolerance
 cm³/1000S. : 5.5
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12
 Rated speed rpm : 2950
 Del. quantity
 cm³/1000 strokes : 2.5
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12
 Rated speed rpm : 900
 Del. quantity
 cm³/1000 strokes : 30.4
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12
 Rated speed rpm : 1200
 Del. quantity
 cm³/1000 strokes : 32.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12
 Rated speed rpm : 1800
 Del. quantity
 cm³/1000 strokes : 32.6
 Tolerance
 cm³/1000 strokes : 1.0
 Check tolerance
 cm³/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12
 Rated speed rpm : 600
 Del. quantity
 cm³/1000 strokes : 31.1
 Tolerance
 cm³/1000 strokes : 1.5

Check tolerance cm3/1000S.	:	2.5
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12
Rated speed rpm	:	2200
Del. quantity cm3/1000 strokes	:	33.0
Tolerance cm3/1000 strokes	:	0.5
Check tolerance cm3/1000S.	:	1.3
Shutoff solenoid Volt	:	12

MECHANICAL SHUTOFF

Rated speed rpm	:	2200
Del. quantity cm3/1000 strokes	:	1.5
Tolerance cm3/1000 strokes	:	1.5
Spread cm3/1000 strokes	:	5.0
Check tolerance cm3/1000S.	:	1.5
Spread cm3/1000 strokes	:	5.0
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm	:	350
Del. quantity cm3/1000 strokes	:	1.5
Tolerance cm3/1000 strokes	:	1.5
Check tolerance cm3/1000S.	:	1.5
Spread cm3/1000 strokes	:	5.0
KSB/AFB Volt	:	12

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm	:	350
Del. quantity cm3/1000 strokes	:	1.5
Tolerance cm3/1000 strokes	:	1.5

Spread cm3/1000 strokes	:	5.0
Check tolerance cm3/1000S.	:	1.5
Spread cm3/1000 strokes	:	5.0
KSB/AFB Volt	:	12

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm	:	900
Del. quantity cm3/1000 strokes	:	-10.6
Tolerance cm3/1000 strokes	:	2.0
Check tolerance cm3/1000S.	:	2.0
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm	:	900
Del. quantity cm3/1000 strokes	:	-0.8
Tolerance cm3/1000 strokes	:	0.1
Check tolerance cm3/1000S.	:	0.1
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12

DELIVERY DIFFERENCE

Rated speed rpm	:	900
Del. quantity cm3/1000 strokes	:	5.0
Tolerance cm3/1000 strokes	:	3.0
Check tolerance cm3/1000S.	:	3.0
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 900
SV travel mm : -0.8
Tolerance mm : 0.5
Check
tolerance mm : 0.5
Shutoff solenoid
Volt : 12
KSB/AFB Volt : 12

START TRANSITION

Rated speed rpm : 340
Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12
KSB/AFB Volt : 12

Rated speed rpm : 210
Del. quantity
cm³/1000 strokes : 55.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12
KSB/AFB Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,8
Tolerance mm : +0,2
Dimension MS mm : 1,2
Tolerance mm : +0,2
KSB travel mm : 6,0
TLA travel mm : 3,7

CONTROL LEVER POSITION SET

Control lever
position YA mm : 30,8..34,8

Control lever
position YB mm : 67,4..78,6

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 25.04.94
Test oil : ISO 4113

Part no. : 0 460 494 299
Pump designation : VE4/9F2350R452

Customer-spec. information
Customer : RENAULT
Motor : J8S - 784

TEST BENCH REQUIREMENTS

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1125

Setting mm : 2.8
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1125

Setting hPa : 4.5
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1125
Del. quantity
cm3/1000 strokes : 36.7
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity
cm3/1000 strokes : 6.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2500
Del. quantity
cm3/1000 strokes : 23.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 72.0
Tolerance
cm3/1000 strokes : 20.0
Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : -11.0
 Tolerance
 cm3/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : -0.2
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : -0.6
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000
 SV travel mm : 7.5
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 SV travel mm : 1.1
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
 Supply pump
 pressure bar : 6.8
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 Supply pump
 pressure bar : 3.4
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2250
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2500
 Del. quantity
 cm3/1000 strokes : 23.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000s. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2650
 Del. quantity
 cm3/1000 strokes : 6.5
 Check tolerance
 cm3/1000s. : 5.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2750
 Del. quantity
 cm3/1000 strokes : 2.5
 Tolerance
 cm3/1000 strokes : 2.5
 Check tolerance
 cm3/1000s. : 2.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2250
 Del. quantity
 cm³/1000 strokes : 36.2
 Tolerance
 cm³/1000 strokes : 1.0
 Check tolerance
 cm³/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1750
 Del. quantity
 cm³/1000 strokes : 35.9
 Tolerance
 cm³/1000 strokes : 1.0
 Check tolerance
 cm³/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 Del. quantity
 cm³/1000 strokes : 35.2
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1125
 Del. quantity
 cm³/1000 strokes : 36.7
 Tolerance
 cm³/1000 strokes : 0.5
 Check tolerance
 cm³/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 425
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5

CHECKING LOAD-DEPENDENT
 START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm³/1000 strokes : -13.0
 Tolerance
 cm³/1000 strokes : 2.0
 Check tolerance
 cm³/1000S. : 2.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm³/1000 strokes : -0.6
 Tolerance
 cm³/1000 strokes : 0.1
 Check tolerance
 cm³/1000S. : 0.1
 Shutoff solenoid
 Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm³/1000 strokes : 5.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1125
 Tolerance mm : 0.2
 Check
 tolerance mm : 0.3
 Shutoff solenoid
 Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
 Del. quantity
 cm³/1000 strokes : 24.0
 Tolerance
 cm³/1000 strokes : 0.5
 Check tolerance
 cm³/1000S. : 2.5

Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 310
Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 210
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 20.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,5
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,5
Tolerance mm : $\pm 0,2$

POTENTIOMETER SET

2. measurement
voltage Volt : ARF 12,0

MICROSWITCH SET

mm : 0,8..3,0
: 11,6..12,4

CONTROL LEVER POSITION SET

Control lever
position YA mm : 37,8..41,8

Control lever
position YB mm : 41,9..52,1

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 25.04.94
Test oil : ISO 4113

Part no. : 0 460 494 300
Pump designation : VE4/9F2350R452-1

Customer-spec. information
Customer : RENAULT
Motor : J8S - 784 CA

TEST BENCH REQUIREMENTS

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1125

Setting mm : 2.8
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1125

Setting hPa : 4.5
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1125
Del. quantity
cm3/1000 strokes : 36.7
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity
cm3/1000 strokes : 6.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2500
Del. quantity
cm3/1000 strokes : 23.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 72.0
Tolerance
cm3/1000 strokes : 20.0
Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm³/1000 strokes : -11.0
 Tolerance
 cm³/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm³/1000 strokes : -0.2
 Tolerance
 cm³/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm³/1000 strokes : -0.6
 Tolerance
 cm³/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000
 SV travel mm : 7.5
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 SV travel mm : 1.1
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
 Supply pump
 pressure bar : 6.8
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 Supply pump
 pressure bar : 3.4
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2250
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2500
 Del. quantity
 cm³/1000 strokes : 23.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000s. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2650
 Del. quantity
 cm³/1000 strokes : 6.5
 Check tolerance
 cm³/1000s. : 5.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2750
 Del. quantity
 cm³/1000 strokes : 2.5
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000s. : 2.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2250
 Del. quantity
 cm3/1000 strokes : 36.2
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1750
 Del. quantity
 cm3/1000 strokes : 35.9
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 Del. quantity
 cm3/1000 strokes : 35.2
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : 36.7
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 425
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5

CHECKING LOAD-DEPENDENT
 START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : -13.0
 Tolerance
 cm3/1000 strokes : 2.0
 Check tolerance
 cm3/1000S. : 2.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : -0.6
 Tolerance
 cm3/1000 strokes : 0.1
 Check tolerance
 cm3/1000S. : 0.1
 Shutoff solenoid
 Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : 5.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1125
 Tolerance mm : 0.2
 Check
 tolerance mm : 0.3
 Shutoff solenoid
 Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
 Del. quantity
 cm3/1000 strokes : 24.0
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 2.5

Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 310
Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 210
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 20.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,5
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,5
Tolerance mm : $\pm 0,2$

POTENTIOMETER SET

2. measurement
voltage Volt : ARF 12,0

MICROSWITCH SET

mm : 0,8...3,0
: 11,6..12,4

CONTROL LEVER POSITION SET

Control lever
position YA mm : 37,8..41,8

Control lever
position YB mm : 41,9..52,1

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 07.07.95

Test oil : ISO 4113

Part no. : 0 460 494 381

Pump designation : VE4/9F2050R452-3

Customer-spec. information

Customer : RENAULT

Motor : J8S - 758

Power kW : 51.0

TEST BENCH REQUIREMENTS

Calibrating oil
return

temperature °C : 45

Tolerance °C : 1

Overflow

restriction mm : 0.55

Inlet press. bar : 0.35

Tolerance bar : 0.05

Test nozzle holder
assembly

: 1 688 901 022

Opening pressure
bar

: 130

Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00

x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1125

Setting mm : 2.8

Tolerance mm : 0.2

Shutoff solenoid

Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1125

Setting hPa : 4.5

Tolerance hPa : 0.3

Shutoff solenoid

Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1125

Del. quantity

cm³/1000 strokes : 35.7

Tolerance

cm³/1000 strokes : 0.5

Spread

cm³/1000 strokes : 2.5

Shutoff solenoid

Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500

Del. quantity

cm³/1000 strokes : 4.0

Tolerance

cm³/1000 strokes : 2.0

Shutoff solenoid

Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2200

Del. quantity

cm³/1000 strokes : 20.0

Tolerance

cm³/1000 strokes : 3.0

Shutoff solenoid

Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity

cm³/1000 strokes : 72.0

Tolerance

cm³/1000 strokes : 20.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1125
Del. quantity
cm³/1000 strokes : -11.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1125
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1125
Del. quantity
cm³/1000 strokes : -0.6
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000

SV travel mm : 7.5
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 800

SV travel mm : 1.1
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
Supply pump
pressure bar : 6.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 800
Supply pump
pressure bar : 3.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2000
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 800
Overflow quantity
ccm/10s : 62.5
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2200
Del. quantity
cm³/1000 strokes : 20.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2350
Del. quantity
cm³/1000 strokes : 6.5
Check tolerance
cm³/1000s. : 5.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2450
 Del. quantity
 cm3/1000 strokes : 2.5
 Tolerance
 cm3/1000 strokes : 2.5
 Check tolerance
 cm3/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2000
 Del. quantity
 cm3/1000 strokes : 34.8
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1750
 Del. quantity
 cm3/1000 strokes : 34.9
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800
 Del. quantity
 cm3/1000 strokes : 34.2
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : 35.7
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400
 Del. quantity
 cm3/1000 strokes : 1.5

Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Spread
 cm3/1000 strokes : 5.0
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : -13.0
 Tolerance
 cm3/1000 strokes : 2.0
 Check tolerance
 cm3/1000S. : 2.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : -0.6
 Tolerance
 cm3/1000 strokes : 0.1
 Check tolerance
 cm3/1000S. : 0.1
 Shutoff solenoid
 Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1125
 Del. quantity
 cm3/1000 strokes : 5.0
 Tolerance
 cm3/1000 strokes : 3.0

Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

: ARF 12,0

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1125
Tolerance mm : 0.2
Check
tolerance mm : 0.3
Shutoff solenoid
Volt : 12

End of test-specification sheet

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 24.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 310
Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 210
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 20.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 5,5
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,2
Tolerance mm : $\pm 0,2$

MICROSWITCH
SET

LO4

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 11.07.95

Test oil : ISO 4113

Part no. : 0 460 484 085

Pump designation : VE4/8F2300R459-2

Customer-spec. information

Customer : RENAULT

Motor : F8Q - 732

Power KW : 47.0

TEST BENCH REQUIREMENTS

Calibrating-oil

return

temperature °C : 45

Tolerance °C : 1

Overflow

restriction mm : 0.55

Inlet press. bar : 0.35

Tolerance bar : 0.05

Test nozzle holde
assembly

: 1 688 901 022

Opening pressure

bar : 130

Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00

x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 4.3

Tolerance mm : 0.2

Shutoff solenoid

Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Setting hPa : 4.8

Tolerance hPa : 0.3

Shutoff solenoid

Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250

Del. quantity

cm3/1000 strokes : 32.1

Tolerance

cm3/1000 strokes : 0.5

Spread

cm3/1000 strokes : 2.5

Shutoff solenoid

Volt : 12

HOUSING-FIXED IDLE SPRING

RESIDUAL QUANTITY SETTING

Rated speed rpm : 550

Del. quantity

cm3/1000 strokes : 3.0

Tolerance

cm3/1000 strokes : 2.0

Shutoff solenoid

Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450

Del. quantity

cm3/1000 strokes : 28.5

Tolerance

cm3/1000 strokes : 3.0

Shutoff solenoid

Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity

cm3/1000 strokes : 55.0

Tolerance

cm3/1000 strokes : 15.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -8.7
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.4
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000

SV travel mm : 8.0
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

SV travel mm : 2.1
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 310

SV travel mm : 1.8
Tolerance mm : 1.2
Check
tolerance mm : 1.2
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 500

SV travel mm : 3.1
Tolerance mm : 1.2
Check
tolerance mm : 1.2
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
Supply pump
pressure bar : 6.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Supply pump
pressure bar : 3.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2250
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2

Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450
Del. quantity
cm3/1000 strokes : 28.5
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2650
Del. quantity
cm3/1000 strokes : 14.5
Check tolerance
cm3/1000S. : 5.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2950
Del. quantity
cm3/1000 strokes : 2.5
Tolerance
cm3/1000 strokes : 2.5
Check tolerance
cm3/1000S. : 2.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2250
Del. quantity
cm3/1000 strokes : 34.0
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1625
Del. quantity
cm3/1000 strokes : 31.6
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 2000
Del. quantity
cm3/1000 strokes : 33.5
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.3

Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Del. quantity
cm3/1000 strokes : 31.7
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 32.1
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : -11.0
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 2.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : -0.4
Tolerance
cm3/1000 strokes : 0.1
Check tolerance
cm3/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 5.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Tolerance mm : 0.2
Check
tolerance mm : 0.3
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 310
Del. quantity
cm3/1000 strokes : 30.0
Tolerance
cm3/1000 strokes : 15.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 210

Del. quantity
cm3/1000 strokes : 55.0
Tolerance
cm3/1000 strokes : 15.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +1
Dimension KF mm : 5,4
Tolerance mm : +0,2
Dimension MS mm : 1,3
Tolerance mm : +0,2

MICROSWITCH
SET

mm : 0,8..3,0
: 9,8..10,6

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 27.11.95
Test oil : ISO 4113

Part no. : 0 460 484 095
Pump designation : VE4/8F2300R463-1

Customer-spec. information

Customer : FIAT-AUTO
Motor : M708SA17/L014
Power KW : 42.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500
Setting mm : 5.3
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500
Setting hPa : 5.6
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : 29.3
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

IDLE SETTING

Rated speed rpm : 450
Del. quantity
cm3/1000 strokes : 12.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12
Spread
cm3/1000 strokes : 2.5
Check tolerance
cm3/1000s. : 3.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2500
Del. quantity
cm3/1000 strokes : 20.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 50.0

Tolerance
 cm³/1000 strokes : 13.0
 Shutoff solenoid
 Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm³/1000 strokes : -8.0
 Tolerance
 cm³/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm³/1000 strokes : -0.2
 Tolerance
 cm³/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm³/1000 strokes : -0.8
 Tolerance
 cm³/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2300
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 800

SV travel mm : 2.0
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.9
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2000

SV travel mm : 7.6
 Tolerance mm : 0.4
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2300
 Supply pump
 pressure bar : 7.7
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 600
 Supply pump
 pressure bar : 3.4
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2300
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 600
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2500
 Del. quantity
 cm³/1000 strokes : 20.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000s. : 5.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2700
 Del. quantity
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 5.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2900
 Del. quantity
 cm³/1000 strokes : 0.8
 Tolerance
 cm³/1000 strokes : 0.8
 Check tolerance
 cm³/1000S. : 0.8
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2300
 Del. quantity
 cm³/1000 strokes : 31.1
 Tolerance
 cm³/1000 strokes : 1.2
 Check tolerance
 cm³/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1000
 Del. quantity
 cm³/1000 strokes : 30.0
 Tolerance
 cm³/1000 strokes : 1.2
 Check tolerance
 cm³/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 600
 Del. quantity
 cm³/1000 strokes : 30.0
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 3.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1500
 Del. quantity
 cm³/1000 strokes : 29.3
 Tolerance
 cm³/1000 strokes : 0.5
 Check tolerance
 cm³/1000S. : 2.3
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 450
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5
 Spread
 cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 450
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Spread
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 1.5
 Spread
 cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 650
 Del. quantity
 cm³/1000 strokes : 2.5
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 550
 Del. quantity
 cm³/1000 strokes : 5.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 5.5
 Shutoff solenoid
 Volt : 12

CHECKING LOAD-DEPENDENT
 START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -10.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : -0.8
Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 30.0
Tolerance
cm³/1000 strokes : 5.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 50.0
Tolerance
cm³/1000 strokes : 8.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,5
Tolerance mm : +0,2
Dimension MS mm : 1,8
Tolerance mm : +0,2

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 07.02.96
Test oil : ISO 4113

Part no. : 0 460 494 356
Pump designation : VE4/9F2100R471-1

Customer-spec. information

Customer : VW
Motor : 1,9 L UD f. T4
Power KW : 50.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return

temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 111

Opening pressure
bar : 147
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

L13

Plunger stroke mm : 0,9
Tolerance mm : +0,02
Outlet : A

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250
Setting mm : 3.9
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250
Setting hPa : 5.6
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity
cm³/1000 strokes : 5.5
Tolerance
cm³/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 15.0
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 65.0
 Tolerance
 cm3/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -7.0
 Tolerance
 cm3/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -0.2
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -1.0
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1700
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.8
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750

SV travel mm : 1.5

Tolerance mm : 0.4
 Check
 tolerance mm : 0.8
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1700
 Supply pump
 pressure bar : 6.9
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Supply pump
 pressure bar : 4.1
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1850
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 55.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 34.7
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
 Del. quantity
 cm3/1000 strokes : 15.0
 Tolerance
 cm3/1000 strokes : 2.0
 Check tolerance
 cm3/1000s. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2250

Del. quantity
cm³/1000 strokes : 29.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2650
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 1850
Del. quantity
cm³/1000 strokes : 41.0
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 450
Del. quantity
cm³/1000 strokes : 39.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 5.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Del. quantity
cm³/1000 strokes : 38.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 40.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.2
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 425
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

RESIDUAL QUANTITY

Rated speed rpm : 515
Del. quantity
cm³/1000 strokes : 6.5
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 2.5
Shutoff solenoid
Volt : 12

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -10.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -1.0
Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000s. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 3.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Supply pump
pressure bar : -0.9
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000s. : 3.0
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380

Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 180
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,3
Tolerance mm : +0,2
Dimension MS mm : 1,3
Tolerance mm : +0,2

MICROSWITCH
SET

mm : 0,8...3,0
: ARF 12,0

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 20,0..22,0
Control lever
position YB mm : 61,5..72,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 12.03.96
Test oil : ISO 4113

Part no. : 0 460 494 391
Pump designation : VE4/9F2100R471-2

Customer-spec. information
Customer : VW
Motor : 1.9L UD
Power KW : 50.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 111

Opening pressure
bar : 147
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 3.9
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Setting hPa : 5.6
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 40.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity
cm3/1000 strokes : 5.5
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 15.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 65.0
Tolerance
cm3/1000 strokes : 25.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -7.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -1.0
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1700
Tolerance mm : 0.4
Check
tolerance mm : 0.8
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
SV travel mm : 1.5
Tolerance mm : 0.4
Check
tolerance mm : 0.8
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1700
Supply pump
pressure bar : 6.9
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Supply pump
pressure bar : 4.1
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1850
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 15.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2250
Del. quantity
cm³/1000 strokes : 29.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000s. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2650
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1850
 Del. quantity
 cm3/1000 strokes : 41.0
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 450
 Del. quantity
 cm3/1000 strokes : 39.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 5.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Del. quantity
 cm3/1000 strokes : 38.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : 40.0
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 425
 Del. quantity
 cm3/1000 strokes : 1.5

Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Spread
 cm3/1000 strokes : 5.0
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

RESIDUAL QUANTITY

Rated speed rpm : 515
 Del. quantity
 cm3/1000 strokes : 6.5
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -10.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -1.0
 Tolerance
 cm3/1000 strokes : 0.1

Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Supply pump
pressure bar : -0.9
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 180

L20

Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,3
Tolerance mm : +0,2
Dimension MS mm : 1,3
Tolerance mm : +0,2

MICROSWITCH SET

: ARF 12,0

CONTROL LEVER POSITION SET

Control lever
position YA mm : 20,0..22,0

Control lever
position YB mm : 61,5..72,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 12.03.96
Test oil : ISO 4113

Part no. : 0 460 494 417
Pump designation : VE4/9F2100R471-3

Customer-spec. information

Customer : VW
Motor : 1.9L UD
Power kW : 50.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 111

Opening pressure
bar : 147
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 3.9
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Setting hPa : 5.6
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 40.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity
cm3/1000 strokes : 5.5
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Del. quantity
cm3/1000 strokes : 15.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 65.0
Tolerance
cm3/1000 strokes : 25.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -7.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -1.0
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1700
Tolerance mm : 0.4
Check
tolerance mm : 0.8
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

SV travel mm : 1.5
Tolerance mm : 0.4
Check
tolerance mm : 0.8
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1700
Supply pump
pressure bar : 6.9
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Supply pump
pressure bar : 4.1
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1850
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 55.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 34.7
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Del. quantity
cm³/1000 strokes : 15.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2250
Del. quantity
cm³/1000 strokes : 29.0
Tolerance
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000s. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2650
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1850
 Del. quantity
 cm3/1000 strokes : 41.0
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 450
 Del. quantity
 cm3/1000 strokes : 39.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 5.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Del. quantity
 cm3/1000 strokes : 38.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : 40.0
 Tolerance
 cm3/1000 strokes : 0.5
 Check tolerance
 cm3/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 425
 Del. quantity
 cm3/1000 strokes : 1.5

Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Spread
 cm3/1000 strokes : 5.0
 Check tolerance
 cm3/1000S. : 1.5
 Spread
 cm3/1000 strokes : 5.0

RESIDUAL QUANTITY

Rated speed rpm : 515
 Del. quantity
 cm3/1000 strokes : 6.5
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -10.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -1.0
 Tolerance
 cm3/1000 strokes : 0.1

Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Supply pump
pressure bar : -0.9
Tolerance hPa : 0.2
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Tolerance mm : 0.2
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 22.0
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 180

Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 5,3
Tolerance mm : +0,2
Dimension MS mm : 1,3
Tolerance mm : +0,2

MICROSWITCH SET

mm : 0,8...3,0
: ARF 12,0

CONTROL LEVER POSITION SET

Control lever
position YA mm : 20,0..22,0

Control lever
position YB mm : 61,5..72,5

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 23.03.94
Test oil : ISO 4113
Part no. : 0 460 494 309
Pump designation : VE4/9F2250R472

Customer-spec. information

Customer : PSA
Motor : XUD 9 TE-Y CATA

TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3
Tolerance mm : +0,2
Outlet : A

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500
Aneroid pressure hPa : 1000
Setting mm : 4.1
Tolerance mm : 0.2
Shutoff solenoid Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500
Aneroid pressure hPa : 1000
Setting hPa : 5.7
Tolerance hPa : 0.3
Shutoff solenoid Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250
Aneroid pressure hPa : 1000
Del. quantity cm³/1000 strokes : 54.0
Tolerance cm³/1000 strokes : 0.5
Spread cm³/1000 strokes : 2.0
Check tolerance cm³/1000s. : 3.0
Shutoff solenoid Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500
Del. quantity cm³/1000 strokes : 37.0
Tolerance cm³/1000 strokes : 0.5
Shutoff solenoid Volt : 12
Check tolerance cm³/1000s. : 3.0

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490

Del. quantity
cm³/1000 strokes : 8.5
Tolerance
cm³/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575
Pressure hPa : 1000
Del. quantity
cm³/1000 strokes : 14.0
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 150
Del. quantity
cm³/1000 strokes : 52.0
Tolerance
cm³/1000 strokes : 15.0
Shutoff solenoid
Volt : 12

SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200
Del. quantity
cm³/1000 strokes : 53.0
Tolerance
cm³/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : 2.6
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000

Aneroid pressure
hPa : 1000

SV travel mm : 6.5
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 900
Aneroid pressure
hPa : 1000

SV travel mm : 1.2
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 6.8
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 900
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 4.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2150
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Aneroid pressure
hPa : 1000

Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2
Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 14.0
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2375
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 39.0
Tolerance
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2750
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 3.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Aneroid pressure
hPa : 350
Del. quantity
cm3/1000 strokes : 46.0
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2150
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 50.1
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 2000
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 52.0
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 48.3
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 54.0
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.2
Shutoff solenoid
Volt : 12

MECHANICAL SHUTOFF

Rated speed rpm : 2000
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5

Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 4.5
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : 2.6
Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Supply pump
pressure bar : 4.5
Tolerance hPa : 0.6
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Tolerance mm : 0.7
Check
tolerance mm : 0.8
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 6,0
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,3
Tolerance mm : $\pm 0,2$

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 18,8..22,8

Control lever
position YB mm : 78,0..92,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 24.03.94
Test oil : ISO 4113
Part no. : 0 460 494 344
Pump designation : VE4/9F2250R472-1

Customer-spec. information

Customer : PSA
Motor : XUD 9 TE-Y

TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde assembly : 1 688 901 022

Opening pressure bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3
Tolerance mm : +-0,02
Outlet : A

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500
Aneroid pressure hPa : 1000
Setting mm : 4.1
Tolerance mm : 0.2
Shutoff solenoid Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500
Aneroid pressure hPa : 1000
Setting hPa : 5.7
Tolerance hPa : 0.3
Shutoff solenoid Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250
Aneroid pressure hPa : 1000
Del. quantity cm3/1000 strokes : 54.0
Tolerance cm3/1000 strokes : 0.5
Spread cm3/1000 strokes : 2.0
Check tolerance cm3/1000S. : 3.0
Shutoff solenoid Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500
Del. quantity cm3/1000 strokes : 37.0
Tolerance cm3/1000 strokes : 0.5
Shutoff solenoid Volt : 12
Check tolerance cm3/1000S. : 3.0

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490

Del. quantity
cm3/1000 strokes : 8.5
Tolerance
cm3/1000 strokes : 0.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575
Pressure hPa : 1000
Del. quantity
cm3/1000 strokes : 14.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 150
Del. quantity
cm3/1000 strokes : 52.0
Tolerance
cm3/1000 strokes : 15.0
Shutoff solenoid
Volt : 12

SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200
Del. quantity
cm3/1000 strokes : 53.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm3/1000 strokes : 2.6
Tolerance
cm3/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000

Aneroid pressure
hPa : 1000

SV travel mm : 6.5
Tolerance mm : 0.4

Check
tolerance mm : 0.7

Shutoff solenoid
Volt : 12

Rated speed rpm : 900
Aneroid pressure
hPa : 1000

SV travel mm : 1.2
Tolerance mm : 0.4

Check
tolerance mm : 0.7

Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
Aneroid pressure
hPa : 1000

Supply pump
pressure bar : 6.8

Tolerance hPa : 0.3

Shutoff solenoid
Volt : 12

Rated speed rpm : 900
Aneroid pressure
hPa : 1000

Supply pump
pressure bar : 4.2

Tolerance hPa : 0.3

Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2150
Aneroid pressure
hPa : 1000

Overflow quantity
ccm/10s : 97.2

Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6

Shutoff solenoid
Volt : 12

Rated speed rpm : 500
Aneroid pressure
hPa : 1000

Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2
 Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 14.0
 Tolerance
 cm³/1000 strokes : 2.0
 Check tolerance
 cm³/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2375
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 39.0
 Tolerance
 cm³/1000 strokes : 5.0
 Check tolerance
 cm³/1000S. : 6.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2750
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 3.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Aneroid pressure
 hPa : 350
 Del. quantity
 cm³/1000 strokes : 46.0
 Tolerance
 cm³/1000 strokes : 0.5
 Check tolerance
 cm³/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2150
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 50.1
 Tolerance
 cm³/1000 strokes : 1.0
 Check tolerance
 cm³/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2000
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 52.0
 Tolerance
 cm³/1000 strokes : 1.0
 Check tolerance
 cm³/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 500
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 48.3
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 3.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1250
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 54.0
 Tolerance
 cm³/1000 strokes : 0.5
 Check tolerance
 cm³/1000S. : 2.2
 Shutoff solenoid
 Volt : 12

MECHANICAL SHUTOFF

Rated speed rpm : 2000
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5

Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000S. : 4.5
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : 2.6
Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
Supply pump
pressure bar : 4.5
Tolerance hPa : 0.6
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
Tolerance mm : 0.7
Check
tolerance mm : 0.8
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 380
Del. quantity
cm³/1000 strokes : 35.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : +0,1
Dimension KF mm : 6,0
Tolerance mm : +0,2
Dimension MS mm : 1,3
Tolerance mm : +0,2

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 28,8..32,8

Control lever
position YB mm : 68,0..82,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 02.06.95
Test oil : ISO 4113

Part no. : 0 460 494 419
Pump designation : VE4/9F2050R476-1

Customer-spec. information
Customer : IVECO-SOFIM
Motor : 8140.97.2500
Power KW : 85.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.75

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

BEGINNING OF DELIVERY

Prestroke

M05

(as of UT) mm : 0,2
Tolerance mm : $\pm 0,02$
Check
tolerance mm : $\pm 0,04$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1400
Aneroid pressure
hPa : 1000

Setting mm : 6.0
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1400
Aneroid pressure
hPa : 1000

Setting hPa : 6.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 68.0
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 3.0
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 42.0
Tolerance
cm³/1000 strokes : 0.5
Shutoff solenoid
Volt : 12
Check tolerance
cm³/1000s. : 3.0

HOUSING-FIXED IDLE SPRING
RESIDUAL QUANTITY SETTING

Rated speed rpm : 550
Del. quantity
cm³/1000 strokes : 3.0
Tolerance
cm³/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
Pressure hPa : 1000
Del. quantity
cm³/1000 strokes : 38.0
Tolerance
cm³/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 62.0
Tolerance
cm³/1000 strokes : 12.0
Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY
SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1000
Pressure hPa : 1000
Del. quantity
cm³/1000 strokes : -20.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : -0.8
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1800
Aneroid pressure
hPa : 1000
SV travel mm : 8.7
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
SV travel mm : 3.0
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 2050
Aneroid pressure
hPa : 1000
SV travel mm : 10.0
Tolerance mm : 0.4
Check
tolerance mm : 0.7
Shutoff solenoid
Volt : 12

Rated speed rpm : 1400
Aneroid pressure
hPa : 1000

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2050
Aneroid pressure
hPa : 1000

Supply pump
pressure bar : 8.7
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 3.4
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 500
Overflow quantity
ccm/10s : 111.1
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 2050
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 138.8
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 38.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2600
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 7.0

Shutoff solenoid
Volt : 12

Rated speed rpm : 2750
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Aneroid pressure
hPa : 350

LDA/
HBA stroke mm : 5.0
Del. quantity
cm³/1000 strokes : 48.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2050
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 69.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 2.2
Shutoff solenoid
Volt : 12

Rated speed rpm : 1950
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 69.0
Tolerance
cm³/1000 strokes : 1.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 600
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 55.5
Tolerance
cm³/1000 strokes : 2.0

Shutoff solenoid
Volt : 12

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 68.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.0
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 425
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

RESIDUAL QUANTITY

Rated speed rpm : 900
Del. quantity
cm³/1000 strokes : 1.0
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

IDLE DELIVERY

Rated speed rpm : 475
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0

Shutoff solenoid
Volt : 12

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : -22.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : -0.8
Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Check
tolerance mm : 0.4
Shutoff solenoid
Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : 1.0
Check tolerance
cm³/1000s. : 2.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 42.0
Tolerance
cm³/1000 strokes : 6.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 200
Del. quantity
cm³/1000 strokes : 62.0
Tolerance
cm³/1000 strokes : 12.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
HBA stroke mm : 5.0
Dimension KF mm : 5,8
Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,3
Tolerance mm : $\pm 0,2$
KSB travel mm : 13,0

POTENTIOMETER SET

1. measurement
voltage Volt : 5,0
1. measurement
voltage Volt : 2,1

MICROSWITCH SET

: ARF 12,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 25.04.95
Test oil : ISO 4113

Part no. : 0 460 494 332
Pump designation : VE4/9F2400R486

Customer-spec. information
Customer : RENAULT
Motor : G8T - 790
Power KW : 60.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

M10

Plunger stroke mm : 1,0
Tolerance mm : +0,02
Outlet : C

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250
Setting mm : 2.5
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250
Setting hPa : 6.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 37.4
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 450
Del. quantity
cm3/1000 strokes : 8.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2600
Del. quantity
cm3/1000 strokes : 23.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 60.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -7.1
 Tolerance
 cm3/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -0.2
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -0.8
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1000

SV travel mm : 1.0

M11

Tolerance mm : 0.4
 Check
 tolerance mm : 0.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750

SV travel mm : 1.0
 Tolerance mm : 1.2
 Check
 tolerance mm : 1.2
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
 Supply pump
 pressure bar : 8.2
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Supply pump
 pressure bar : 4.7
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2300
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6
 Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2600

Del. quantity
cm3/1000 strokes : 23.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2500
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 4.0
Check tolerance
cm3/1000S. : 5.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2800
Del. quantity
cm3/1000 strokes : 2.5
Tolerance
cm3/1000 strokes : 2.5
Check tolerance
cm3/1000S. : 2.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm3/1000 strokes : 41.0
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Del. quantity
cm3/1000 strokes : 37.7
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 2000
Del. quantity
cm3/1000 strokes : 40.3
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 37.4
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 385
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 385
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250

Del. quantity
cm³/1000 strokes : -9.4
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 2.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.8
Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000s. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 3.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Tolerance mm : 0.2
Check
tolerance mm : 0.3
Shutoff solenoid
Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000s. : 2.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 30.0

Tolerance
cm³/1000 strokes : 15.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 200
Del. quantity
cm³/1000 strokes : 70.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7
Tolerance mm : +0,1
Dimension KF mm : 6,0
Tolerance mm : +0,2
Dimension MS mm : 0,9
Tolerance mm : +0,2

MICROSWITCH SET

mm : 0,8...3,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 25.04.95
Test oil : ISO 4113
Part no. : 0 460 494 333
Pump designation : VE4/9F2400R486-1

Customer-spec. information
Customer : RENAULT
Motor : G8T - 790 CA
Power KW : 60.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,0
Tolerance mm : $\pm 0,02$
Outlet : C

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250
Setting mm : 2.5
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250
Setting hPa : 6.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 37.4
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 450
Del. quantity
cm³/1000 strokes : 8.0
Tolerance
cm³/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2600
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 60.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -7.1
 Tolerance
 cm3/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -0.2
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
 Del. quantity
 cm3/1000 strokes : -0.8
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1000
 SV travel mm : 1.0

Tolerance mm : 0.4
 Check
 tolerance mm : 0.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 SV travel mm : 1.0
 Tolerance mm : 1.2
 Check
 tolerance mm : 1.2
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
 Supply pump
 pressure bar : 8.2
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Supply pump
 pressure bar : 4.7
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2300
 Overflow quantity
 ccm/10s : 97.2
 Tolerance
 ccm/10s : 41.6
 Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 750
 Overflow quantity
 ccm/10s : 63.8
 Tolerance
 ccm/10s : 22.2
 Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2600

Del. quantity
cm3/1000 strokes : 23.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 4.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2500
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 4.0
Check tolerance
cm3/1000S. : 5.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2800
Del. quantity
cm3/1000 strokes : 2.5
Tolerance
cm3/1000 strokes : 2.5
Check tolerance
cm3/1000S. : 2.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm3/1000 strokes : 41.0
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Del. quantity
cm3/1000 strokes : 37.7
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 2000
Del. quantity
cm3/1000 strokes : 40.3
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 37.4
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 385
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 385
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250

Del. quantity
cm3/1000 strokes : -9.4
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 2.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : -0.8
Tolerance
cm3/1000 strokes : 0.1
Check tolerance
cm3/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 5.0
Tolerance
cm3/1000 strokes : 3.0
Check tolerance
cm3/1000S. : 3.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Tolerance mm : 0.2
Check
tolerance mm : 0.3
Shutoff solenoid
Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 23.0
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 350
Del. quantity
cm3/1000 strokes : 30.0

Tolerance
cm3/1000 strokes : 15.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 200
Del. quantity
cm3/1000 strokes : 70.0
Tolerance
cm3/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7
Tolerance mm : $\pm 0,1$
Dimension KF mm : 6,0
Tolerance mm : $\pm 0,2$
Dimension MS mm : 0,9
Tolerance mm : $\pm 0,2$

MICROSWITCH SET

mm : 0,8...3,0
: ARF 12,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 07.03.95
Test oil : ISO 4113

Part no. : 0 460 494 405
Pump designation : VE4/9F2400R486-2

Customer-spec. information
Customer : RENAULT
Motor : G8T - 790
Power KW : 60.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250
Setting mm : 2.5
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250
Setting hPa : 6.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 37.4
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 450
Del. quantity
cm3/1000 strokes : 8.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2600
Del. quantity
cm3/1000 strokes : 23.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 60.0
Tolerance
cm3/1000 strokes : 15.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -7.1
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.8
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000
Tolerance mm : 0.4
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000

SV travel mm : 1.0
Tolerance mm : 0.4
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

SV travel mm : 1.0
Tolerance mm : 1.2
Check
tolerance mm : 1.2
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
Supply pump
pressure bar : 8.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Supply pump
pressure bar : 4.7
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2300
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2600
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 4.0

Shutoff solenoid
Volt : 12

Rated speed rpm : 2500
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 4.0
Check tolerance
cm3/1000S. : 5.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2800
Del. quantity
cm3/1000 strokes : 2.5
Tolerance
cm3/1000 strokes : 2.5
Check tolerance
cm3/1000S. : 2.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm3/1000 strokes : 41.0
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Del. quantity
cm3/1000 strokes : 37.7
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 2000
Del. quantity
cm3/1000 strokes : 40.3
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 2.3

Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 37.4
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 385
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 385
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : -9.4
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 2.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250

Del. quantity
cm³/1000 strokes : -0.8
Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Tolerance mm : 0.2
Check
tolerance mm : 0.3
Shutoff solenoid
Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 30.0
Tolerance
cm³/1000 strokes : 15.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 200
Del. quantity
cm³/1000 strokes : 70.0
Tolerance
cm³/1000 strokes : 25.0

Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7
Tolerance mm : $\pm 0,1$
Dimension KF mm : KOT
Dimension MS mm : 0,9
Tolerance mm : $\pm 0,2$

MICROSWITCH SET

mm : 0,8...3,0
: ARF 12,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 21.03.95
Test oil : ISO 4113

Part no. : 0 460 494 406
Pump designation : VE4/9F2400R486-3

Customer-spec. information

Customer : RENAULT
Motor : G8T-790 CA
Power KW : 60.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 022

Opening pressure
bar : 130
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1250
Setting mm : 2.5
Tolerance mm : 0.2
Shutoff solenoid
Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1250
Setting hPa : 6.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 37.4
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 2.5
Shutoff solenoid
Volt : 12

HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 450
Del. quantity
cm3/1000 strokes : 8.0
Tolerance
cm3/1000 strokes : 2.0
Shutoff solenoid
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2600
Del. quantity
cm3/1000 strokes : 23.0
Tolerance
cm3/1000 strokes : 3.0
Shutoff solenoid
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm3/1000 strokes : 60.0
Tolerance
cm3/1000 strokes : 15.0

Shutoff solenoid
Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -7.1
Tolerance
cm³/1000 strokes : 1.0
Shutoff solenoid
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.2
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.8
Tolerance
cm³/1000 strokes : 0.1
Shutoff solenoid
Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000
Tolerance mm : 0.4
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000

SV travel mm : 1.0
Tolerance mm : 0.4
Check
tolerance mm : 0.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 750

SV travel mm : 1.0
Tolerance mm : 1.2
Check
tolerance mm : 1.2
Shutoff solenoid
Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000
Supply pump
pressure bar : 8.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Supply pump
pressure bar : 4.7
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2300
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6
Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2600
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 4.0

Shutoff solenoid
Volt : 12

Rated speed rpm : 2500
Del. quantity
cm3/1000 strokes : 35.5
Tolerance
cm3/1000 strokes : 4.0
Check tolerance
cm3/1000S. : 5.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 2800
Del. quantity
cm3/1000 strokes : 2.5
Tolerance
cm3/1000 strokes : 2.5
Check tolerance
cm3/1000S. : 2.5
Shutoff solenoid
Volt : 12

Rated speed rpm : 2300
Del. quantity
cm3/1000 strokes : 41.0
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 1000
Del. quantity
cm3/1000 strokes : 37.7
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 2000
Del. quantity
cm3/1000 strokes : 40.3
Tolerance
cm3/1000 strokes : 1.0
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

Rated speed rpm : 750
Del. quantity
cm3/1000 strokes : 36.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 2.3

Shutoff solenoid
Volt : 12

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : 37.4
Tolerance
cm3/1000 strokes : 0.5
Check tolerance
cm3/1000S. : 2.3
Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 385
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 385
Del. quantity
cm3/1000 strokes : 1.5
Tolerance
cm3/1000 strokes : 1.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 1.5
Spread
cm3/1000 strokes : 5.0

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm3/1000 strokes : -9.4
Tolerance
cm3/1000 strokes : 2.0
Check tolerance
cm3/1000S. : 2.0

Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : -0.8
Tolerance
cm³/1000 strokes : 0.1
Check tolerance
cm³/1000S. : 0.1
Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 5.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250
Tolerance mm : 0.2
Check
tolerance mm : 0.3
Shutoff solenoid
Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250
Del. quantity
cm³/1000 strokes : 23.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.5
Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 30.0
Tolerance
cm³/1000 strokes : 15.0
Shutoff solenoid
Volt : 12

Rated speed rpm : 200
Del. quantity
cm³/1000 strokes : 70.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7
Tolerance mm : +0,1
Dimension KF mm : KOT
Dimension MS mm : 0,9
Tolerance mm : +0,2

MICROSWITCH
SET

mm : 0,8...3,0
: ARF 12,0

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 02.01.96
Test oil : ISO 4113

Part no. : 0 460 414 096
Pump designation : VE4/11F2100R493

Customer-spec. information

Customer : FIAT-AUTO
Motor : M711 KT 19.D
Power KW : 72.0

TEST BENCH REQUIREMENTS

Calibrating-oil return

temperature °C : 55
Tolerance °C : 1

Overflow restriction mm : 0.75

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holder assembly : 1 688 901 116

Opening pressure bar : 207
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500
Aneroid pressure hPa : 1000

Setting mm : 6.2
Tolerance mm : 0.2
Shutoff solenoid Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500
Aneroid pressure hPa : 1000

Setting hPa : 7.3
Tolerance hPa : 0.2
Shutoff solenoid Volt : 12

KSB/AFB Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1750
Aneroid pressure hPa : 1000

Del. quantity cm3/1000 strokes : 63.0
Tolerance cm3/1000 strokes : 0.5
Spread cm3/1000 strokes : 4.0
Check tolerance cm3/1000S. : 4.5
Shutoff solenoid Volt : 12

KSB/AFB Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 750
Del. quantity cm3/1000 strokes : 44.5

Tolerance cm3/1000 strokes : 0.5
Shutoff solenoid Volt : 12
Check tolerance cm3/1000S. : 4.5

KSB/AFB Volt : 12

IDLE SETTING

Rated speed rpm : 450
 Del. quantity
 cm3/1000 strokes : 8.0
 Tolerance
 cm3/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 12
 Spread
 cm3/1000 strokes : 6.0
 Check tolerance
 cm3/1000S. : 6.5
 KSB/AFB Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
 Pressure hPa : 1000
 Del. quantity
 cm3/1000 strokes : 32.0
 Tolerance
 cm3/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 70.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 32.0
 Tolerance
 cm3/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500

Del. quantity
 cm3/1000 strokes : -9.0
 Tolerance
 cm3/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : -0.2
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : -0.6
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000
 Aneroid pressure
 hPa : 1000
 SV travel mm : 8.1
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.9
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12
 Rated speed rpm : 750
 Aneroid pressure
 hPa : 1000
 SV travel mm : 2.3
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.9

Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 450
Aneroid pressure	
hPa	: 1000
SV travel mm	: 3.0
Tolerance mm	: 0.1
Check	
tolerance mm	: 1.0
Shutoff solenoid	
Volt	: 12
Rated speed rpm	: 1000
Aneroid pressure	
hPa	: 1000
SV travel mm	: 4.6
Tolerance mm	: 1.0
Check	
tolerance mm	: 1.2
Shutoff solenoid	
Volt	: 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm	: 2100
Aneroid pressure	
hPa	: 1000
Supply pump	
pressure bar	: 8.5
Tolerance hPa	: 0.3
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 750
Aneroid pressure	
hPa	: 1000
Supply pump	
pressure bar	: 5.5
Tolerance hPa	: 0.3
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12

OVERFLOW QUANTITY

Rated speed rpm	: 2100
Aneroid pressure	
hPa	: 1000
Overflow quantity	
ccm/10s	: 138.8
Tolerance	
ccm/10s	: 41.6

Check tolerance	
ccm/10s	: 41.6
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 750
Aneroid pressure	
hPa	: 1000
Overflow quantity	
ccm/10s	: 111.1
Tolerance	
ccm/10s	: 22.2
Check tolerance	
ccm/10s	: 22.2
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm	: 2400
Aneroid pressure	
hPa	: 1000
Del. quantity	
cm ³ /1000 strokes	: 32.0
Tolerance	
cm ³ /1000 strokes	: 2.0
Check tolerance	
cm ³ /1000s.	: 6.0
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 2500
Aneroid pressure	
hPa	: 1000
Del. quantity	
cm ³ /1000 strokes	: 20.0
Check tolerance	
cm ³ /1000s.	: 6.0
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 2500
Aneroid pressure	
hPa	: 1000
Del. quantity	
cm ³ /1000 strokes	: 44.0
Tolerance	
cm ³ /1000 strokes	: 4.0
Shutoff solenoid	
Volt	: 12

KSB/AFB Volt	:	12
Rated speed rpm	:	2650
Aneroid pressure hPa	:	1000
Del. quantity cm3/1000 strokes	:	1.5
Tolerance cm3/1000 strokes	:	1.5
Check tolerance cm3/1000S.	:	1.5
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12
Rated speed rpm	:	750
Aneroid pressure hPa	:	400
Del. quantity cm3/1000 strokes	:	64.0
Tolerance cm3/1000 strokes	:	0.5
Check tolerance cm3/1000S.	:	4.0
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12
Rated speed rpm	:	2100
Aneroid pressure hPa	:	1000
Del. quantity cm3/1000 strokes	:	61.0
Tolerance cm3/1000 strokes	:	2.0
Check tolerance cm3/1000S.	:	4.0
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12
Rated speed rpm	:	550
Del. quantity cm3/1000 strokes	:	47.5
Tolerance cm3/1000 strokes	:	3.0
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12
Rated speed rpm	:	1500
Aneroid pressure hPa	:	1000
Del. quantity cm3/1000 strokes	:	63.5

Tolerance cm3/1000 strokes	:	2.5
Check tolerance cm3/1000S.	:	4.0
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12
Rated speed rpm	:	750
Aneroid pressure hPa	:	1000
Del. quantity cm3/1000 strokes	:	75.0
Tolerance cm3/1000 strokes	:	4.5
Shutoff solenoid Volt	:	12
KSB/AFB Volt	:	12
Rated speed rpm	:	1750
Aneroid pressure hPa	:	1000
Del. quantity cm3/1000 strokes	:	63.0
Tolerance cm3/1000 strokes	:	0.5
Check tolerance cm3/1000S.	:	3.5
Shutoff solenoid Volt	:	12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm	:	450
Del. quantity cm3/1000 strokes	:	1.5
Tolerance cm3/1000 strokes	:	1.5
Check tolerance cm3/1000S.	:	1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm	:	450
Del. quantity cm3/1000 strokes	:	1.5
Tolerance cm3/1000 strokes	:	1.5
Check tolerance cm3/1000S.	:	1.5

IDLE DELIVERY

Rated speed rpm	:	500
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Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

 Rated speed rpm : 470
 Del. quantity
 cm3/1000 strokes : 3.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : -9.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : -0.6
 Tolerance
 cm3/1000 strokes : 0.1
 Check tolerance
 cm3/1000S. : 0.1
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : 5.0
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 1.0
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.4
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
 Del. quantity
 cm3/1000 strokes : 17.9
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.5
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

START TRANSITION

Rated speed rpm : 450
 Del. quantity
 cm3/1000 strokes : 60.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

Rated speed rpm : 250
 Del. quantity
 cm3/1000 strokes : 85.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : K1
Dimension KF mm : 5,4
Tolerance mm : $\pm 0,2$

POTENTIOMETER
SET

1. measurement
voltage Volt : 5,0
1. measurement
voltage Volt : 2,0

MICROSWITCH
SET

mm : GST 76,9
: ARF 12,0

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 43,0..45,0

Control lever
position YB mm : 54,8..65,2

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 13.03.95
Test oil : ISO 4113

Part no. : 0 460 414 125
Pump designation : VE4/11F2100R493-1

Customer-spec. information

Customer : FIAT-AUTO
Motor : M711 NT 19.L
Power KW : 70.0

TEST BENCH REQUIREMENTS

Calibrating-oil return

temperature °C : 55
Tolerance °C : 1

Overflow restriction mm : 0.75

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holder assembly : 1 688 901 116

Opening pressure bar : 207
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1500
Aneroid pressure hPa : 1000

Setting mm : 6.2
Tolerance mm : 0.2
Shutoff solenoid Volt : 12

KSB/AFB Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1500
Aneroid pressure hPa : 1000

Setting hPa : 7.3
Tolerance hPa : 0.2
Shutoff solenoid Volt : 12

KSB/AFB Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1750
Aneroid pressure hPa : 1000

Del. quantity cm³/1000 strokes : 63.0
Tolerance cm³/1000 strokes : 0.5
Spread

cm³/1000 strokes : 4.0
Check tolerance cm³/1000s. : 4.5
Shutoff solenoid Volt : 12

KSB/AFB Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 750
Del. quantity cm³/1000 strokes : 44.5

Tolerance cm³/1000 strokes : 0.5
Shutoff solenoid Volt : 12
Check tolerance cm³/1000s. : 4.5

KSB/AFB Volt : 12

IDLE SETTING

Rated speed rpm : 450
 Del. quantity
 cm3/1000 strokes : 8.0
 Tolerance
 cm3/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 12
 Spread
 cm3/1000 strokes : 6.0
 Check tolerance
 cm3/1000s. : 6.5
 KSB/AFB Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400
 Pressure hPa : 1000
 Del. quantity
 cm3/1000 strokes : 32.0
 Tolerance
 cm3/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 70.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

SETTING GRAD. STARTING FUEL DELIVERY FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 32.0
 Tolerance
 cm3/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1500

Del. quantity
 cm3/1000 strokes : -9.0
 Tolerance
 cm3/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : -0.2
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : -0.6
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000
 Aneroid pressure
 hPa : 1000
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.9
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12
 Rated speed rpm : 750
 Aneroid pressure
 hPa : 1000
 SV travel mm : 2.3
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.9
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12
 Setting point KSB
 Rated speed rpm : 450
 Aneroid pressure
 hPa : 1000

 SV travel mm : 3.0
 Tolerance mm : 0.1
 Check
 tolerance mm : 1.0
 Shutoff solenoid
 Volt : 12

 Rated speed rpm : 1000
 Aneroid pressure
 hPa : 1000

 SV travel mm : 4.6
 Tolerance mm : 1.0
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 8.5
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

 Rated speed rpm : 750
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 5.5
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 138.8
 Tolerance
 ccm/10s : 41.6

 Check tolerance
 ccm/10s : 41.6

Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

 Rated speed rpm : 750
 Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 111.1
 Tolerance
 ccm/10s : 22.2

 Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 32.0
 Tolerance
 cm³/1000 strokes : 2.0
 Check tolerance
 cm³/1000s. : 5.0
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

 Rated speed rpm : 2500
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 20.0
 Check tolerance
 cm³/1000s. : 6.0
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

 Rated speed rpm : 2300
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 44.0
 Tolerance
 cm³/1000 strokes : 4.0
 Shutoff solenoid
 Volt : 12

 KSB/AFB Volt : 12

Rated speed rpm : 2620
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 750
 Aneroid pressure
 hPa : 400

LDA/
 HBA stroke mm : 7.4
 Del. quantity
 cm³/1000 strokes : 64.0
 Tolerance
 cm³/1000 strokes : 0.5
 Check tolerance
 cm³/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 61.0
 Tolerance
 cm³/1000 strokes : 2.0
 Check tolerance
 cm³/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 550
 Del. quantity
 cm³/1000 strokes : 47.5
 Tolerance
 cm³/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 1500
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 63.5

Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 750
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 75.0
 Tolerance
 cm³/1000 strokes : 4.5
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 1750
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 63.0
 Tolerance
 cm³/1000 strokes : 0.5
 Check tolerance
 cm³/1000S. : 3.5
 Shutoff solenoid
 Volt : 12

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 450
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5
 Spread
 cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 450
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5

IDLE DELIVERY

Rated speed rpm : 500
 Del. quantity
 cm3/1000 strokes : 1.5
 Tolerance
 cm3/1000 strokes : 1.5
 Check tolerance
 cm3/1000S. : 1.5
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

Rated speed rpm : 470
 Del. quantity
 cm3/1000 strokes : 3.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

CHECKING LOAD-DEPENDENT START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : -9.0
 Tolerance
 cm3/1000 strokes : 3.0
 Check tolerance
 cm3/1000S. : 4.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : -0.6
 Tolerance
 cm3/1000 strokes : 0.1
 Check tolerance
 cm3/1000S. : 0.1
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

DELIVERY DIFFERENCE

NO8

Rated speed rpm : 1500
 Del. quantity
 cm3/1000 strokes : 5.0
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 1.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.4
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000
 Del. quantity
 cm3/1000 strokes : 17.9
 Tolerance
 cm3/1000 strokes : 1.0
 Check tolerance
 cm3/1000S. : 2.5
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

START TRANSITION

Rated speed rpm : 450
 Del. quantity
 cm3/1000 strokes : 60.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12
 KSB/AFB Volt : 12

Rated speed rpm : 250
 Del. quantity
 cm3/1000 strokes : 85.0
 Tolerance
 cm3/1000 strokes : 15.0
 Shutoff solenoid
 Volt : 12

KSB/AFB Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
HBA stroke mm : 7.4
Dimension K mm : K1
Dimension KF mm : KOT
MS1 dimension mm : 1,2
Tolerance mm : +0,15/-0,1

MICROSWITCH
SET

mm : ARF 12,0

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 43,0..45,0

Control lever
position YB mm : 54,8..65,2

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 21.06.95
Test oil : ISO 4113

Part no. : 0 460 414 121
Pump designation : VE4/11F1900R494-1

Customer-spec. information
Customer : IVECO-SOFIM
Motor : 8140.47.2585

TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.75

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde assembly : 1 688 901 027

Opening pressure bar : 250
Tolerance bar : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 450

REMARKS

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 1200
Aneroid pressure hPa : 1000

Setting mm : 1.8
Tolerance mm : 0.1
Shutoff solenoid Volt : 12

SUPPLY PUMP PRESSURE

Rated speed rpm : 1200
Aneroid pressure hPa : 1000

Setting hPa : 6.0
Tolerance hPa : 0.3
Shutoff solenoid Volt : 12

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1400
Aneroid pressure hPa : 1000
Del. quantity cm3/1000 strokes : 56.0
Tolerance cm3/1000 strokes : 0.5
Spread cm3/1000 strokes : 4.0
Check tolerance cm3/1000S. : 4.5
Shutoff solenoid Volt : 12

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 550
Del. quantity cm3/1000 strokes : 27.0
Tolerance cm3/1000 strokes : 0.5
Shutoff solenoid Volt : 12
Check tolerance cm3/1000S. : 4.5

IDLE SETTING

Rated speed rpm : 325
Del. quantity cm3/1000 strokes : 17.0
Tolerance cm3/1000 strokes : 2.0
Shutoff solenoid Volt : 12
Spread cm3/1000 strokes : 6.0
Check tolerance cm3/1000S. : 6.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2100
 Pressure hPa : 1000
 Del. quantity
 cm3/1000 strokes : 37.0
 Tolerance
 cm3/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 65.0
 Tolerance
 cm3/1000 strokes : 25.0
 Shutoff solenoid
 Volt : 12

LOAD-DEPENDENT START OF DELIVERY SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1400
 Pressure hPa : 1000
 Del. quantity
 cm3/1000 strokes : -26.0
 Tolerance
 cm3/1000 strokes : 1.0
 Shutoff solenoid
 Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1400
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : -0.2
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1400
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm3/1000 strokes : -0.8
 Tolerance
 cm3/1000 strokes : 0.1
 Shutoff solenoid
 Volt : 12

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1600
 Aneroid pressure
 hPa : 1000
 SV travel mm : 4.3
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1100
 Aneroid pressure
 hPa : 1000
 SV travel mm : 1.0
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1900
 Aneroid pressure
 hPa : 1000
 SV travel mm : 4.9
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 12

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1900
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 8.5
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 700
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 4.1
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 12

OVERFLOW QUANTITY

Rated speed rpm : 1900
 Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 138.8
 Tolerance
 ccm/10s : 41.6

Check tolerance
 ccm/10s : 41.6
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 700
 Aneroid pressure
 hPa : 1000
 Overflow quantity
 ccm/10s : 111.1
 Tolerance
 ccm/10s : 22.2

Check tolerance
 ccm/10s : 22.2
 Shutoff solenoid
 Volt : 12

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2100
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 37.0
 Tolerance
 cm³/1000 strokes : 3.0
 Check tolerance
 cm³/1000S. : 4.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2200
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 18.0
 Check tolerance
 cm³/1000S. : 6.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 2280
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 1.5
 Tolerance
 cm³/1000 strokes : 1.5
 Check tolerance
 cm³/1000S. : 1.5

Shutoff solenoid
 Volt : 12

Rated speed rpm : 700
 Aneroid pressure
 hPa : 400
 Del. quantity
 cm³/1000 strokes : 44.0
 Tolerance
 cm³/1000 strokes : 0.5
 Check tolerance
 cm³/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1900
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 58.5
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 3.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1200
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 56.0
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 4.0
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 1750
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 58.0
 Tolerance
 cm³/1000 strokes : 2.5
 Check tolerance
 cm³/1000S. : 3.5
 Shutoff solenoid
 Volt : 12

Rated speed rpm : 700
 Aneroid pressure
 hPa : 1000
 Del. quantity
 cm³/1000 strokes : 59.0
 Tolerance
 cm³/1000 strokes : 4.5
 Check tolerance
 cm³/1000S. : 5.5

Shutoff solenoid
Volt : 12

Rated speed rpm : 1400

Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 56.0

Tolerance
cm³/1000 strokes : 0.5

Check tolerance
cm³/1000S. : 3.5

Shutoff solenoid
Volt : 12

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 325

Del. quantity
cm³/1000 strokes : 1.5

Tolerance
cm³/1000 strokes : 1.5

Check tolerance
cm³/1000S. : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 325

Del. quantity
cm³/1000 strokes : 1.5

Tolerance
cm³/1000 strokes : 1.5

Check tolerance
cm³/1000S. : 1.5

IDLE DELIVERY

Rated speed rpm : 450

Del. quantity
cm³/1000 strokes : 1.5

Tolerance
cm³/1000 strokes : 1.5

Check tolerance
cm³/1000S. : 1.5

Shutoff solenoid
Volt : 12

CHECKING LOAD-DEPENDENT
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1400

Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : -28.0

Tolerance
cm³/1000 strokes : 3.0

Check tolerance
cm³/1000S. : 4.0

Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1400

Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : -0.8

Tolerance
cm³/1000 strokes : 0.1

Check tolerance
cm³/1000S. : 0.1

Shutoff solenoid
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1400

Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 1.5

Tolerance
cm³/1000 strokes : 1.5

Check tolerance
cm³/1000S. : 1.5

Shutoff solenoid
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1400

Aneroid pressure
hPa : 1000

Tolerance mm : 0.2

Check
tolerance mm : 0.4

Shutoff solenoid
Volt : 12

START TRANSITION

Rated speed rpm : 500

Del. quantity
cm³/1000 strokes : 22.0

Tolerance
cm³/1000 strokes : 8.0

Shutoff solenoid
Volt : 12

Rated speed rpm : 200
Del. quantity
cm³/1000 strokes : 80.0
Tolerance
cm³/1000 strokes : 25.0
Shutoff solenoid
Volt : 12

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3
Tolerance mm : $\pm 0,1$
Dimension KF mm : 8,4
Tolerance mm : $\pm 0,2$
MS1 dimension mm : 1,7
Tolerance mm : $+0,15/-0,1$
KSB travel mm : 7,0

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 37,9..39,9

Control lever
position YB mm : 43,7..48,9

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 22.11.93
Test oil : ISO 4113
Part no. : 0 460 426 209
Pump designation : VE6/12F1200R496

Customer-spec. information
Customer : MAN
Motor : D 0826 LF 07
Power KW : 140.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 110

Opening pressure
bar : 250
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Prestroke

(as of UT) mm : 0,2
Tolerance mm : $\pm 0,02$
Check
tolerance mm : $\pm 0,04$

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 850
Aneroid pressure
hPa : 1000

Setting mm : 2.2
Tolerance mm : 0.2

SUPPLY PUMP PRESSURE

Rated speed rpm : 850
Aneroid pressure
hPa : 1000

Setting hPa : 7.6
Tolerance hPa : 0.3

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 92.0
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 4.0
Check tolerance
cm³/1000S. : 4.5

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 60.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 4.5

IDLE SETTING

Rated speed rpm : 250
Del. quantity
cm³/1000 strokes : 20.0
Tolerance
cm³/1000 strokes : 3.5
Spread
cm³/1000 strokes : 6.0

Check tolerance
cm³/1000S. : 6.5

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1280
Pressure hPa : 1000
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 3.0

STARTING FUEL DELIVERY

Rated speed rpm : 100
Del. quantity
cm³/1000 strokes : 80.0
Tolerance
cm³/1000 strokes : 20.0

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 950
Aneroid pressure
hPa : 1000
SV travel mm : 3.3
Tolerance mm : 0.4
Check
tolerance mm : 0.7

Rated speed rpm : 750
Aneroid pressure
hPa : 1000
SV travel mm : 1.0
Tolerance mm : 0.4
Check
tolerance mm : 0.7

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000
Supply pump
pressure bar : 9.3
Tolerance hPa : 0.3

Rated speed rpm : 500
Aneroid pressure
hPa : 1000

Supply pump
pressure bar : 5.8
Tolerance hPa : 0.3

OVERFLOW QUANTITY

Rated speed rpm : 500
Overflow quantity
ccm/10s : 63.8
Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1280
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 65.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 4.5

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 7.5
Check tolerance
cm³/1000S. : 7.5

Rated speed rpm : 1450
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

Rated speed rpm : 1300
Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 48.0
Tolerance
cm³/1000 strokes : 18.0
Check tolerance
cm³/1000S. : 18.0

Rated speed rpm : 500
Aneroid pressure
hPa : 450
Del. quantity
cm³/1000 strokes : 93.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.5

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 89.4
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 4.0

Rated speed rpm : 600
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 101.0
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 4.0

Rated speed rpm : 800
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 94.6
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 4.0

Rated speed rpm : 500
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 106.6
Tolerance
cm³/1000 strokes : 4.5
Check tolerance
cm³/1000S. : 6.0

Rated speed rpm : 1000
Aneroid pressure
hPa : 1000

Del. quantity
cm³/1000 strokes : 92.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 2.5

MECHANICAL SHUTOFF

Rated speed rpm : 1200
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 400
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

START TRANSITION

Rated speed rpm : 430
Del. quantity
cm³/1000 strokes : 55.0
Tolerance
cm³/1000 strokes : 15.0

Rated speed rpm : 330
Del. quantity
cm³/1000 strokes : 85.0
Tolerance
cm³/1000 strokes : 15.0

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension KF mm : 6,0

Tolerance mm : $\pm 0,2$
Dimension MS mm : 1,1
Tolerance mm : $\pm 0,2$

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 07.06.95
Test oil : ISO 4113
Part no. : 0 460 426 244
Pump designation : VE6/12F1250R498-3

Customer-spec. information
Customer : CDC
Motor : 6 BT 5.9B

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1

Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 109

Opening pressure
bar : 207
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,2
Tolerance mm : +0,02
Outlet : D

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 900
Aneroid pressure
hPa : 1000
Setting mm : 1.7
Tolerance mm : 0.2
Shutoff solenoid
Volt : 24

SUPPLY PUMP PRESSURE

Rated speed rpm : 900
Aneroid pressure
hPa : 1000
Setting hPa : 6.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 850
Aneroid pressure
hPa : 1000
Del. quantity
cm3/1000 strokes : 85.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 5.0
Check tolerance
cm3/1000S. : 5.0
Shutoff solenoid
Volt : 24

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 61.0
Tolerance
cm3/1000 strokes : 0.5
Spread
cm3/1000 strokes : 5.0
Shutoff solenoid
Volt : 24
Check tolerance
cm3/1000S. : 6.0
Check tolerance
cm3/1000S. : 5.0

IDLE SETTING

Rated speed rpm : 350
 Del. quantity
 cm³/1000 strokes : 13.0
 Tolerance
 cm³/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 24
 Spread
 cm³/1000 strokes : 5.5
 Check tolerance
 cm³/1000s. : 7.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1350
 Pressure hPa : 1000
 Del. quantity
 cm³/1000 strokes : 54.0
 Tolerance
 cm³/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 24

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm³/1000 strokes : 80.0
 Tolerance
 cm³/1000 strokes : 20.0
 Shutoff solenoid
 Volt : 24

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1250
 Aneroid pressure
 hPa : 1000
 SV travel mm : 2.6
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
 Aneroid pressure
 hPa : 1000

Shutoff solenoid
 Volt : 24

Rated speed rpm : 450

SV travel mm : 2.5
 Tolerance mm : 0.5
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 800
 Aneroid pressure
 hPa : 1000

SV travel mm : 1.3
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 24

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1250
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 7.5
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 800
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 5.7
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 4.2
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

OVERFLOW QUANTITY

Rated speed rpm : 500
 Overflow quantity
 ccm/10s : 63.8

Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 24

Rated speed rpm : 1250
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 97.2
Tolerance
ccm/10s : 41.6

Check tolerance
ccm/10s : 41.6
Shutoff solenoid
Volt : 24

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1350
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 54.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000s. : 8.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1425
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 25.0
Check tolerance
cm³/1000s. : 15.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1480
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 650
Aneroid pressure
hPa : 450

Del. quantity
cm³/1000 strokes : 72.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000s. : 4.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1250
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 82.0
Tolerance
cm³/1000 strokes : 2.0
Check tolerance
cm³/1000s. : 3.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1100
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 85.0
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 850
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 85.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000s. : 3.0
Shutoff solenoid
Volt : 24

MECHANICAL SHUTOFF

Rated speed rpm : 1250
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000s. : 1.5
Shutoff solenoid
Volt : 24

ELECTR. SHUTOFF
CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 1.5

IDLE DELIVERY

Rated speed rpm : 410
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 24

START TRANSITION

Rated speed rpm : 210
Del. quantity
cm³/1000 strokes : 75.0
Tolerance
cm³/1000 strokes : 20.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 130
Del. quantity
cm³/1000 strokes : 95.0
Tolerance
cm³/1000 strokes : 20.0
Shutoff solenoid
Volt : 24

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7
Tolerance mm : $\pm 0,1$

N22

Dimension KF mm : 6,4
Tolerance mm : $\pm 0,2$
MS1 dimension mm : 1,36
Tolerance mm : $\pm 0,15/-0,1$

CONTROL LEVER POSITION
SET

Control lever
position YA mm : 34,8..38,8

Control lever
position YB mm : 43,6..48,8

End of test-specification sheet

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 28.02.96
Test oil : ISO 4113
Part no. : 0 460 426 245
Pump designation : VE6/12F1250R498-4

Customer-spec. information
Customer : CDC
Motor : 6 BT 5.9B

TEST BENCH REQUIREMENTS

Calibrating-oil
return
temperature °C : 45
Tolerance °C : 1
Overflow
restriction mm : 0.55

Inlet press. bar : 0.35
Tolerance bar : 0.05

Test nozzle holde
assembly : 1 688 901 109

Opening pressure
bar : 207
Tolerance bar : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00
x length mm : 840

REMARKS

BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,4
Tolerance mm : $\pm 0,02$
Outlet : D

INJECTION PUMP SETTING VALUES

TIMING DEVICE TRAVEL

Rated speed rpm : 900
Aneroid pressure
hPa : 1000
Setting mm : 1.4
Tolerance mm : 0.2
Shutoff solenoid
Volt : 24

SUPPLY PUMP PRESSURE

Rated speed rpm : 900
Aneroid pressure
hPa : 1000
Setting hPa : 6.2
Tolerance hPa : 0.3
Shutoff solenoid
Volt : 24

FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 850
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 83.0
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000s. : 5.0
Shutoff solenoid
Volt : 24

FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500
Del. quantity
cm³/1000 strokes : 69.5
Tolerance
cm³/1000 strokes : 0.5
Spread
cm³/1000 strokes : 5.0
Shutoff solenoid
Volt : 24
Check tolerance
cm³/1000s. : 6.0
Check tolerance
cm³/1000s. : 5.0

IDLE SETTING

Rated speed rpm : 330
 Del. quantity
 cm3/1000 strokes : 9.0
 Tolerance
 cm3/1000 strokes : 2.0
 Shutoff solenoid
 Volt : 24
 Spread
 cm3/1000 strokes : 5.5
 Check tolerance
 cm3/1000S. : 7.0

FULL-LOAD SPEED REGULATION

Rated speed rpm : 1380
 Pressure hPa : 1000
 Del. quantity
 cm3/1000 strokes : 63.0
 Tolerance
 cm3/1000 strokes : 3.0
 Shutoff solenoid
 Volt : 24

STARTING FUEL DELIVERY

Rated speed rpm : 100
 Del. quantity
 cm3/1000 strokes : 130.0
 Tolerance
 cm3/1000 strokes : 20.0
 Shutoff solenoid
 Volt : 24

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1250
 Aneroid pressure
 hPa : 1000
 SV travel mm : 2.8
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
 Aneroid pressure
 hPa : 1000

Shutoff solenoid
 Volt : 24

Rated speed rpm : 450

SV travel mm : 2.5
 Tolerance mm : 0.5
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 800
 Aneroid pressure
 hPa : 1000

SV travel mm : 1.0
 Tolerance mm : 0.4
 Check
 tolerance mm : 0.7
 Shutoff solenoid
 Volt : 24

SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1250
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 7.5
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 800
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 5.7
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

Rated speed rpm : 500
 Aneroid pressure
 hPa : 1000
 Supply pump
 pressure bar : 4.2
 Tolerance hPa : 0.3
 Shutoff solenoid
 Volt : 24

OVERFLOW QUANTITY

Rated speed rpm : 500
 Overflow quantity
 ccm/10s : 72.2

Tolerance
ccm/10s : 22.2

Check tolerance
ccm/10s : 22.2
Shutoff solenoid
Volt : 24

Rated speed rpm : 1250
Aneroid pressure
hPa : 1000
Overflow quantity
ccm/10s : 88.8
Tolerance
ccm/10s : 27.7

Check tolerance
ccm/10s : 27.7
Shutoff solenoid
Volt : 24

DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1380
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 63.0
Tolerance
cm³/1000 strokes : 3.0
Check tolerance
cm³/1000S. : 8.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1430
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 30.0
Check tolerance
cm³/1000S. : 15.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1490
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 600

Aneroid pressure
hPa : 450

LDA/
HBA stroke mm : 7.0
Del. quantity
cm³/1000 strokes : 84.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 4.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 1250
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 86.0
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 900
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 83.5
Tolerance
cm³/1000 strokes : 2.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 1100
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 85.5
Tolerance
cm³/1000 strokes : 2.5
Check tolerance
cm³/1000S. : 3.5
Shutoff solenoid
Volt : 24

Rated speed rpm : 850
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 83.0
Tolerance
cm³/1000 strokes : 0.5
Check tolerance
cm³/1000S. : 3.0
Shutoff solenoid
Volt : 24

MECHANICAL SHUTOFF

Rated speed rpm : 1250
Aneroid pressure
hPa : 1000
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0
Shutoff solenoid
Volt : 24

ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Spread
cm³/1000 strokes : 5.0
Check tolerance
cm³/1000S. : 1.5
Spread
cm³/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 390
Del. quantity
cm³/1000 strokes : 1.5
Tolerance
cm³/1000 strokes : 1.5
Check tolerance
cm³/1000S. : 1.5
Shutoff solenoid
Volt : 24

START TRANSITION

Rated speed rpm : 240
Del. quantity
cm³/1000 strokes : 78.0
Tolerance
cm³/1000 strokes : 10.0
Shutoff solenoid
Volt : 24

Rated speed rpm : 130
Del. quantity
cm³/1000 strokes : 130.0
Tolerance
cm³/1000 strokes : 20.0
Shutoff solenoid
Volt : 24

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/
HBA stroke mm : 7.0
Dimension K mm : 3,7
Tolerance mm : $\pm 0,1$
Dimension KF mm : 6,4
Tolerance mm : $\pm 0,2$
MS1 dimension mm : 1,1
Tolerance mm : $\pm 0,15/-0,1$

CONTROL LEVER POSITION SET

Control lever
position YA mm : 34,8..38,8

Control lever
position YB mm : 45,3..50,5

End of test-specification sheet